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ABSTRACT

Papers presented at this conference were grouped under the following seven broad themes: "Thinking Skills: The Bridge Between Data and Knowledge"; "From Today to Tomorrow: Bridging the Future"; "Cultural Understanding: Bridging Diverse Culture"; "Cultural Expression: Creating Bridges of Meaning"; "Access to Information: Narrowing the Gap"; "Mass Media: Spanning the Globe"; and "Summation." Titles and authors of the thirty papers presented are as follows: (1) "Attitudes of Youth toward Reading before and after a Motivational Project" (Shirley A. Fitzgibbons); (2) "Critical Thinking: Tools for Internet Information Evaluation" (Mary Ann Fitzgerald); (3) "High School to University: What Skills Do Students Need?" (Eileen Daniel); (4) "Information Skills: The Reflections and Perceptions of Student Teachers and Related Professionals" (Kay Wilson); (5) "Integrating Information Technology into and across the Curriculum: A Short Course for Secondary Students" (Eleanor B. Howe); (6) "An Interdisciplinary Model for Assessing Learning" (Robert Grover, Jacqueline McMahon Lakin, and Jane Dickerson); (7) "Meeting Drug Information Needs of Adolescents" (Ross Todd); (8) "Living and Learning in the Global Village" (Gene Burdenuk); (9) "Evolution and Revolution in School Library Practice" (Suzette Boyd); (10) "Information Literacy: Teacher's Perspectives of the Information Process" (Judy O'Connell and James Henri); (11) "The Impact of a Technology-Rich Environment" (Dania B. Meghabghab and Catherine Price); (12) "It's the Same the Whole World Over: Bridging the Gap in New Zealand" (Elizabeth Probert and

John Fowler); (13) "Library Power as a Vehicle for the Evolution of Change" (Shirley A. Tastad and Julie Talman); (14) "Not Extinct! School Libraries for Learning and Leadership" (Kay Ellen Hones); (15) "Our Patch vs. Their Patch: Information Technology and Literacy in Schools" (Barbara Yates); (16) "A Reality Check: The Challenges of Implementing Information Power in School Library Media Programs" (Cheryl Ann McCarthy); (17) "Teacher-Librarians in Learning Organizations" (Jean Brown and Bruce Sheppard); (18) "We've Done Research, Now What? Multimedia Authoring as a Report Tool" (Michelle Larose-Kuzenko); (19) "Accepting Tolerance and Diversity" (Madeleine Hoss and Roslyn Wylie); (20) "Best Children's Picture Books from Abroad: Valuing Other Cultures" (Maureen White); (21) "Information for All: Resource Generation and Information Repackaging in Nigerian Schools" (Virginia W. Dike and Nancy Amucheazi); (22) "The Impact of the Prince Edward Island School Library Policy on the Development of School Library Programs Across Prince Edward Island" (Ray Doiron and Judy Davies); (23) "Libraries and Reading Habits Among Elementary School Children: The Concept of the Classroom Collection" (Snunith Shoham); (24) "Providing Potential for Progress: Learning Support for Students with Special Educational Needs" (Margaret Kinnell Evans and Peggy Heeks); (25) "The Relationship of School Materials and Resources to Reading Literacy: An International Perspective" (Victor Froese); (26) "The School Librarian as Internet Mediator: A Case Study and Evaluation" (James Herring); (27) "Planning for Action: Turning Meaningful Data into Programs and Promotion" (Eleanor Howe, Jack Stack, and Marcia Rettig-Seitam) (28) "Teacher-Librarian? What's in a Name? Making Meaning from Metaphor" (James Henri); (29) "Delphi Studies: The Value of Expert Opinion Bridging the Gap--Data to Knowledge" (Arthur Wizenried); (30) "The Information Literacy Movement of the School Library Media Field: A Preliminary Summary of the Research" (David V. Loertscher and Blanche Woolls). (SWC)

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Emerging Issues for Schools and Libraries Worldwide

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LYNNE LIGHTHALL

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Information Rich but Knowledge Poor? Emerging Issues for Schools and Libraries Worldwide

edited by
Lynne Lighthall
Ken Haycock

Research and Professional Papers Presented at the
26th annual conference of the
International Association of School Librarianship
held in conjunction with the
Association for Teacher-librarianship in Canada
at the University of British Columbia
Vancouver, British Columbia, Canada
July 06-11, 1997

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We acknowledge the efforts of Elissa Checov, a recent graduate of the Master of Library and Information Studies program at the School of Library, Archival and Information Studies, for her care and diligence in copy editing and data entry.

We also recognize the contribution made by the members of the Research Forum Jury and the review panel for the professional papers. They are: Dr. Anne Clyde (Iceland), Dr. Rebecca Knuth (USA), Dr. Maureen Nimon (Australia), and Dr. Dianne Oberg for the research forum; and Judy Davies (Canada), Gloria Hersak (Canada), and Ted Monkhouse (Canada) for the professional papers.

And, most importantly, we express our appreciation to all the presenters who responded to the Call for Proposals with such timely and relevant topics and then took the time and effort to turn them into the thoughtful papers presented here. We have learned much from all of them.

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THE EDITORS

Lynne Lighthall is an assistant professor in the School of Library, Archival and Information Studies at the University of British Columbia (Canada) where she teaches in the areas of the organization of knowledge and bibliographic control of information. Prior to her full-time appointment at SLAIS she was a sessional lecturer in the Teacher-Librarianship Diploma Program at UBC (a position she continued to fill until 1996) and Manager, Library Services for the Vancouver School Board.

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INTRODUCTION

Bridging the Gap is the International Association of School Librarianship's 26th annual conference and the Association for Teacher-Librarianship in Canada's fifth. Its overall underlying theme is "Information Rich but Knowledge Poor? Emerging Issues for Schools and Libraries Worldwide." The conference sessions explore this theme in six distinct, but interrelated, strands.

"Theme 1: Thinking Skills: The Bridge Between Data and Knowledge" is the most basic expression of the conference theme. The sessions in this strand deal with the complexity of knowledge acquisition in the information age. "Theme 2: From Today to Tomorrow: Bridging the Future" focuses on how societal changes and expectations, as well as expanding technologies, are producing major changes in education, including the role of the teacher-librarian.

The sessions in "Theme 3: Cultural Understanding: Bridging Diverse Cultures" promote the importance of cross-cultural understanding and the ways and means of achieving it. Assisting young people to develop an appreciation of the richness of their own and other peoples' cultures lies at the heart of "Theme 4: Cultural Expression: Creating Bridges of Meaning."

"Theme 5: Access to Information: Narrowing the Gap" between the information haves and the information have-nots speaks for itself. The love-hate relationship we often have with the mass media because of the impact on young people is the basis for the sessions in "Theme 6: Mass Media: Spanning the Globe." "Theme 7: Summation" summarizes the research on information literacy.

The First International Forum on Research in School Librarianship

The IASL conferences have always included the presentation of research and professional papers but this year they have been separately highlighted as distinct from each other and from the other program sessions. Indeed, Bridging the Gap features the first-ever International Forum on Research in School Librarianship. Over 30 proposals involving 45 researchers from seven countries were adjudicated by an international jury.

The forum includes thirteen papers from seventeen researchers in five countries: Australia, Canada, Israel, the United Kingdom, and the United States of America. In addition, a Research Methodologies Panel features speakers from Australia, Scotland, and the United States and a moderator from Iceland. The research papers and the reports to the methodologies panel are a major component of these conference Proceedings.

The papers deal with a wide variety of quantitative and qualitative research methods, case studies, questionnaires, comparative methods, interviews, metaphor technique, and action research to name but a few. Three of these are highlighted in the Research Methodologies Panel that opens the Forum.

The papers cover an equally wide variety of topics. Implementing guidelines/policy/standards, effecting change in learning (and learning organizations), information technology, learning assessment, cognitive processes, and literacy in all its guises, among other topics, come under the researchers' scrutiny. But, despite the variety in topics and methodologies, the papers have in common the message that research studies are important in informing and advancing professional practice in school librarianship.

Addressing the Conference Theme

A serious concern of researchers is how best to develop Thinking Skills: The Bridge Between Data and Knowledge for improved student learning. As reading is one of the bases of thinking skills, Shirley Fitzgibbons (USA) (p. 3) examines the "Attitudes of Youth Toward Reading Before and After a Motivational Project" in 30 elementary and middle schools using a nationally-tested instrument. The results of this study have implications for the types of programs offered by teacher-librarians as well as for access to books and the use of libraries generally.

Working with newer media, Mary Ann Fitzgerald (USA) (p. 39) investigates "Critical Thinking: Tools for Internet Information Evaluation" by exploring the cognitive processes involved in evaluating information found on the World Wide Web: As she observes expert adult users encountering misinformation Fitzgerald notes the strategies that they employ in these encounters. She provides detailed analyses of misinformation samples and is then able to suggest effective strategies to use with young people to help them to recognize and deal with misinformation on the Web.

In a different vein, Eileen Daniel (Canada) (p. 53) examines one of the "bridges" from "High School to University: What Skills Do Students Need?" to inform secondary school teacher-librarians and academic librarians of mutual expectations and concerns.

If these information skills are necessary to be developed in students it is apparent that teachers must exercise these skills themselves. In "Information Skills: The Reflections and Perceptions of Student Teachers and Related Professionals" Kay Wilson (UK) (p. 63) finds that student teachers in secondary schools in Scotland neither possess these abilities nor are they encouraged to develop them by their training institutions or sponsor teachers. This does not bode well for incorporating specific instruction in classroom programs.

Eleanor Howe (p. 75) incorporates an extensive review of the professional literature plus results from an action study she conducted at an independent secondary school in Pittsburgh, Pennsylvania, USA to conclude that information skills are best imparted through systematic formal instruction. She argues that some skills are best taught in the context of a particular subject course and in collaboration with the subject teacher, while other skills are best taught across the curriculum, i.e., as courses (or parts of courses) unto themselves, and by the teacher-librarian or media specialist. "Integrating Information Technology Into and Across the Curriculum: A Short Course for Students" may be taken as a model by secondary school personnel everywhere.

Of course, teaching is not the same as learning, and even direct teaching of these information-based problem-solving strategies is only successful when students do learn them and apply them successfully. In "An Interdisciplinary Model for Assessing Learning" Bob Grover, Jacqueline McMahon Lakin and Jane Dickerson (USA) (p. 87) outline the development of a model for assessment of student learning, delineate its various elements and present preliminary findings from their testing of the model. Clear, specific and authentic assessment of student learning in this area is one of the basic "bridges" we have been missing.

In a similarly qualitative study, Ross Todd (Australia) (p. 97) reports on his observations of four teenagers in his paper "Meeting Drug Information Needs of Adolescents." Again, learning why students accept or reject information and how they put it to their own use has implications for library media programs and roles for the teacher-librarian, and leads to useful suggestions for improving student effectiveness.

In a reflective paper, "Living and Learning in the Global Village," Gene Burdenuk (p. 109) posits four factors that will impact on living and learning as we move into the 21st century. He points to how these factors are important in defining the role of the teacher-librarian in the late 1990s how they constitute the principles underlying all the teacher-librarian is and does. His paper, like Suzette Boyd's (below), constitutes an inventory of desirable guidelines for transformation for teacher-librarians and other educators. Although Burdenuk speaks from a Canadian perspective and uses Canadian examples his commentary is a fitting one for an international audience.

From Today to Tomorrow: Bridging the Future provides recognition that the skills and abilities of teacher-librarians must be upgraded and expanded to serve the future needs of students. "Teacher-librarians in Learning Organizations" must function both as members of teams engaged in organizational learning and as leaders of leaders. According to the empirical research of Jean Brown and Bruce Sheppard (Canada) (p. 197) effective teacher-librarians are mirror images of other teacher leaders while also adding value to the organization as leaders in teacher-librarianship.

One question that continues to arise, however, is whether these expectations for teacher-librarians are reasonable given the typical culture of the school. In "A Reality Check: The Challenges of Implementing Information Power in School Library Media Programs", Cheryl Ann McCarthy (USA) (p. 179) examines how well school library media programs are realizing the mission, objectives and challenges set by the national (USA) standards Information Power. She studies 48 recommended school library media programs using a combination of quantitative and qualitative methods to identify and document important support mechanisms as well as the continuing barriers to success.

Where Fitzgerald's support mechanisms, including role clarification, flexible scheduling, collaborative work environments and administrative support, are in place, wonderful things can happen in schools. Using the national (USA) project "Library Power as a Vehicle for the Evolution of Change", Shirley Tastad and Julie Tallman (USA) (p. 155) report on the positive results identified in two schools based on their three year ongoing investigation of changes that have taken place as a result of this reform effort.

Ray Doiron and Judy Davies' (Canada) (p. 257) study of "The Impact of the Prince Edward Island School Library Policy on the Development of School Library Programs Across Prince Edward Island" provides an overview the past 15 years of progress and puts forward 25 recommended actions for improvement based on their research, as one component of the strand Access to Information: Narrowing the Gap and a comprehensive agenda for renewal.

Narrowing the gap is also possible through examination of access in particular areas and with particular students. Snunith Shoham (Israel) (p. 269) looks at "Libraries and Reading Habits Among Elementary School Children: The Concept of the Classroom Collection" by examining the reading patters of fourth grade students after two years of experience with classroom collections and the factors which contribute to those patterns. On a broader scale, Victor Froese (Canada) (p. 289) reports on "The Relationship of School Materials and Resources to Reading Literacy: An International Perspective" from data generated by an international reading literacy study conducted in 32 countries; he provides details of school and home resources in each country and explores the relationship between those resources available, those used by students and student achievement.

Special students with special needs also require special support for access to information. Margaret Kinnell Evans and Peggy Heeks (UK) (p. 277) investigate "Providing Potential for Progress: Learning Support for Students with Special Education Needs" by looking at the support structure, including school libraries and librarians, for 12 year olds with learning difficulties serious enough to warrant placement on the special education needs register.

This first international Research Forum opens with another new component at this conference, a Research Methodologies Panel, chaired by Anne Clyde (Iceland) (p. 311), past chair of the IASL Research Committee. Four methodologies are presented by different researchers who have employed one of them in a specific recent study.

For the teacher-librarian Eleanor Howe (USA) (p. 321) provides a useful overview of the variety of researchable questions one might pose and the various strategies that one could use in action research in one's own school or school district in "Planning for Action: Turning Meaningful Data into Programs and Promotion". James Herring (Scotland) (313) outlines the particular strengths and uniqueness of case studies and provides an example through his recent study of the "School Librarian as Internet Mediator: A Case Study and Evaluation". Drawing on a different approach James Henri (Australia) (p. 329) uses a metaphor technique to work with small groups of educators to gauge response to different names for the teacher-librarian in "Teacher-librarian: What's in a Name?" Looking to the future, Arthur Wizenreid (Australia) (p. 335) has employed the Delphi methodology to work with an international panel of experts in school librarianship to forecast future roles and responsibilities "In Sharing Is Our Strength: Teacher-librarians of 2007."

The Professional Papers

Presented by speakers from Australia, Canada, New Zealand, Nigeria and the United States of America, the series of thirteen professional papers are an integral part of the conference program, with a number of papers being offered each day. They are reproduced in these Proceedings in their entirety.

Each of the papers addresses the overall conference theme and its many interwoven threads in one way or another. Some are descriptions of innovative practices that have been proven to work. Others constitute a rallying cry to implement such practices lest the gap between the information haves and have-nots never be bridged. Others are more reflective or philosophical in nature, making us of the principles underlying what we do and why we do it. And still others take on a cautionary tone as they urge us to look around and look ahead to best define and defend our role.

Indeed, role definition/clarification comes up again and again. It is heartening to see that nearly all the papers speak to the increasing complexity and vitality of the role of the teacher-librarian or library media specialist. Far from becoming extinct or preparing to disappear, teacher-librarians and media specialists are ever more essential and relevant in the information age.

All of the professional papers are personalized accounts to some degree and many describe initiatives undertaken or innovations introduced in a specific school or school system. Even so, they go beyond the usual how I did it good in my library genre. There is much value added to the descriptions, for example:

- in the detailing of rationales and principles underlying the projects;
- in the specification of procedures and processes so that others could replicate a study or project;
- in the provision of specific and concrete examples;
- in a thorough search of the professional literature; and/or
- in an examination of the research literature.

Addressing Other Conference Themes

Three of the professional papers deal with the most basic of the conference themes "Thinking Skills: The Bridge Between Data and Knowledge." "Information Literacy Movement" by David Loertscher and Blanche Woolls is a state-of-the-art discussion of information literacy. The latest and best models, the accompanying research and the influence on the practice are topics of interest to us all. Three papers deal with cultural themes, two with "Cultural Understanding: Bridging Diverse Cultures and one with Cultural Expression: Creating Bridges of Meaning."

Madeleine Hoss and Roslyn Wylie's paper, "Accepting Tolerance and Diversity: Our Challenge for 1997,"(p. 227) stems from the premise that bringing the world to the library through carefully crafted programs develops in children a tolerance for diversity and an appreciation for the contributions and achievements of peoples from many cultures. They present examples of successful programs as well as a "Bibliography of Tolerance and Diversity Sources."

In "Best children's Books from Abroad: Valuing Other Cultures," (p. 231) Maureen White echoes Hoss and Wylie's contention that today, students have much to learn about themselves and the world in which they live from studying other cultures. She recounts her experience of building a database of children's books in translation and notes that, although the translated books may be different in 'look' from their American counterparts, they are not so different in content nor in intent for their young readers. The paper concludes with a "Recommended List of Translated Children's Books" from the past five years.

Virginia Dike and Nancy Amucheazi (p. 245) outline another effective technique for what Gene Burdenuk calls "living and learning in the global village." They believe there is a wealth of information in the oral tradition and that schools and libraries have an important role to play in tapping that tradition. information for All: "Resource Generation and Information Repackaging in Nigerian Schools" delivers a useful message to those who would create an information and knowledge rich environment for all children.

Not surprisingly, the majority (seven) of the professional papers deal with the practicalities of "From Today to Tomorrow: Bridging the Future."

Suzette Boyd (p. 121) presents a profile of the revulsionary teacher-librarian and goes on to detail how she achieved this revolution at a large secondary school in Australia. She emphasizes the importance of a shared vision with the parent organization and working within the context provided by that vision and the clearly articulated mission statement, goals, and objectives that follow from it. She also underscores the importance of a personal belief system that values what teacher-librarians are and what they do. "Evolution and Revolution in School Library Practice" amounts to a useful checklist/inventory for teacher-librarians and media specialists everywhere and provides a practical complement to Gene Burdenuk's more philosophical stance (p. 109).

"The Impact of a Technology-Rich Environment" by Dania Meghabghab and Catherine Price (p. 137) describes how lottery funding in the state of Georgia (USA) has markedly changed information access, teaching and learning in its K-12 schools. This papers points to an alternative source of funding to enable schools (and libraries) to embrace and implement the new technologies in a meaningful way to benefit students. The authors caution, however, that funding isn't everything. It can fluctuate or even disappear, but even more important is the requirement that there be the necessary support, infrastructure, and expertise to effectively use the technologies the funding provides!

"It's the Same the Whole World Over: Bridging the Gap in New Zealand" (p. 143) begins by briefly chronicling the history of education in New Zealand and the importance to education in general and to library services and programs in particular of the publication in 1988 of national guidelines. It concludes with a recounting of the personal experience of its two authors: Elizabeth Probert and John Fowler to apply the guidelines in their own secondary schools. Reading this account of efforts in New Zealand should strike a chord with others who are undertaking a similar process of defining and refining role descriptions and attempting to implement meaningful services and programs in the face of many obstacles.

In "Not Extinct! School Libraries for Learning and Leadership," Kay Ellen Hones (p. 165) describes an initiative undertaken in the San Francisco Unified School District (USA) to bring its library media centers and library media teachers back from the brink of extinction. The paper echoes points made by Dania Meghabghab and Catherine Price about alternative sources of funding and by Elizabeth Probert and John Fowler about role definition.

"Out Patch vs. Their Patch" by Barbara Yates (p. 171) also deals with the information technology revolution and its impact on educational roles and responsibilities. She begins by pointing out that school librarians in Australia were possibly risking extinction because their roles were not defined clearly enough to be fully understood by others. Then, like Suzette Boyd, she reminds us of the groundwork (shared vision, mission statement, etc.) that must come before wholeheartedly embracing information technology. Although the paper focuses on role descriptions in the Australian setting, there are parallels to other countries and words of advice for all.

In "Teacher's Perspectives of the Information Process," Judy O'Connell and James Henri (p. 125) question why educational programs are not always producing the desired outcomes increased information literacy and lifelong learning skills despite the best intentions of teachers and librarians to integrate information skills into the curriculum. A possible answer may lie in attitudes to technology, another in attitudes to the whole information-seeking process. The authors describe a study undertaken at a secondary school in Australia to examine how teachers personal experiences of the information-seeking process using both print and electronic resources may influence their teaching of information skills. The implications for professional practice apply worldwide.

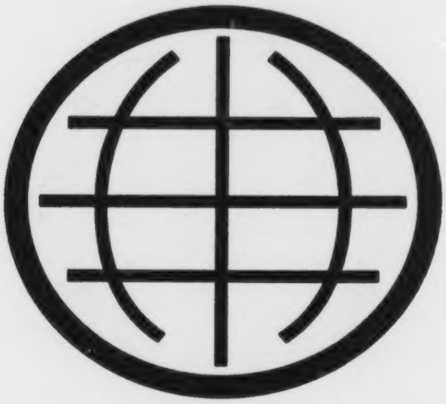
Michelle Larose-Kuzenko's "We've Done Research, Now What? Multimedia Authoring as a Reporting Tool" (p. 217) makes the point that information technology must be integrated with the subject at hand, it must be a tool through which students learn a subject rather than the subject students are learning! She describes a specific project with the senior students in her elementary school in Winnipeg, Manitoba, Canada to use multimedia authoring to report on their research. Echoing what others have also observed and concluded Larose-Kuzenko maintains that so-called computer skills must be integrated with other studies and not taught as a separate subject ... nor by a separate technology specialist.

Taken together, the series of professional papers and the papers in the First International Forum on Research in School Librarianship (p. 311) included in these Proceedings constitute a timely record of Bridging the Gap and an important contribution to the literature.

Lynne Lighthall
Ken Haycock
1997 May

Theme 1

THINKING SKILLS: THE BRIDGE BETWEEN DATA AND KNOWLEDGE



ATTITUDES OF YOUTH TOWARD READING BEFORE AND AFTER A MOTIVATIONAL PROJECT

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ABSTRACT

As part of an evaluation project assessing the impact of a specific reading motivation program in 30 schools (20 elementary, 10 middle), a longitudinal study of student reading attitudes was conducted using the nationally-tested Elementary Reading Attitude Survey instrument. The instrument tested both attitudes toward recreational reading and school reading. The results have implications for types of reading programs as well as book access and use of libraries.

BACKGROUND

Introduction

Recently, more attention has been paid to the need to motivate and encourage reading in addition to the teaching of reading skills. The landmark publication, *Becoming a nation of readers: The report of the Commission on Reading*, concluded that "Among all the ways the children reported spending their leisure time, average minutes per day reading books was the best predictor of reading comprehension, vocabulary size, and gains in reading achievement between the second and fifth grade." (Anderson, Hiebert, Scott, & Wilkinson, 1985, p.77) Personal, independent reading, either in school or out-of-school, is extremely important; yet most studies have shown that "...the amount of time children spend reading in the average classroom is small" (7 or 8 minutes or less than 10% of the total time devoted to reading) (Anderson et al., p. 76); and "... most children don't read very much during their free time... (about 1% of their free time)." (p. 77) In that same report, several factors are identified as important in the creation of readers including home environments (especially reading aloud to young children as readiness for learning to read), and the use of reading instructional time in school. One of the primary objectives of the "whole language" and "literature across the curriculum" movements has been to encourage more independent reading.

Consequently, school personnel need to know what factors affect student reading attitudes and behaviors so that they can more successfully motivate students to read. McKenna, Kear, and Ellsworth (1995) present a rationale for the importance of research on student reading attitudes:

> Understanding the role of attitude in developing readers is important for two principal reasons. First, attitude may affect the level of ability ultimately attained by a given student through its influence on such factors as engagement and practice. Second, even for the fluent reader, poor attitude may occasion a choice not to read when other options exist, a condition now generally known as aliteracy. (p. 934)

Attitudes are acquired through experience, can be observed through behavior, and persist over time. It is important to acknowledge that attitude is a learned response which is influenced by many environmental factors such as home, school, and peers. Initially thought to be more of a cognitive aspect, today most social psychologists consider attitude to be related to several affective aspects such as the individual's self-esteem, values, feelings, and interests (Cothern & Collins, 1992). Several researchers have explored the relationship between reading attitudes and achievement; generally results have shown that low achievement correlates positively with a negative attitude toward reading (Cothern & Collins). Attitudes have been shown to decline from a positive attitude in primary grades to a negative attitude in the upper grades and secondary grades (Alexander & Filler, 1976). Student attitudes toward reading are important; educators and librarians, knowing that attitudes toward reading are learned responses, need to determine the types of motivation that might improve attitudes and consequently, reading behaviors and achievement.

Purpose and Questions

This report includes the results of one part of a series of studies in a major investigation of students' reading. An innovative project, Project REAP (Reading Excitement and Paperbacks Project), administered by the Indiana Department of Education and funded by the Lilly Endowment, included several phases of a "books in schools" special project in Indiana public schools implemented between 1988 and 1995. This particular study was part of the Evaluation Study of the REAP 3 project conducted between 1993 and 1995.

Children and young adults in grades four through eight in 30 schools were involved in the project including 20 elementary schools and 10 middle/junior high schools. Each elementary school received a $7000 grant and each middle school received a $14,000 grant for two purposes: purchase of a large number of paperback books for libraries and classrooms and for initiation of several school motivational innovations to encourage reading. At the beginning of the project, preview collections were brought to each school for students and teachers to help choose their school's REAP book collections. For the REAP 3 phase of the project, the following activities were specifically encouraged by the REAP project director:

(1) classroom collections of books;
(2) initiation of Sustained, Silent Reading (SIR);
(3) teacher read-alouds;
(4) special reading motivational activities.

The REAP 3 evaluation study of this project included five case study school reports based on onsite school observations and a series of interviews, a mail questionnaire to all teachers and other relevant school personnel, and testing of students' attitudes toward reading. Only the attitudinal part of the evaluation study will be included in this report.

The study's purpose was to assess students' feelings (attitudes) about reading both in school and for recreational purposes. Several questions directed the focus of the study including:

(1) Did the activities of the REAP 3 project over a two-year time period affect attitudes toward reading?
(2) Are there differences between grade levels in reading attitude scores: total scores, recreational reading scores, or academic/school reading attitude scores? Are there differences between elementary school students and middle school students on these scores?
(3) Are there differences between genders in reading attitude scores: total scores, recreational reading scores, or academic/school reading attitude scores?
(4) Are there differences between schools on student reading attitudes?

Gender, grade level, and school served as the independent variables in the study in relationship to the dependent variables of attitude test scores (both pretest and post-test) and two subscales of the test, attitude toward recreational reading and attitude toward school reading. Ideally, data would have been obtained on student ability levels (reading test scores) as a background variable. Although this was initially considered, it was not feasible for several reasons: there were large numbers of respondents from many schools, making it a burdensome administrative task for the schools; Indiana students do not take a standardized reading test at each of the respondents' grade levels; and the scores would only be useful for students with matching pretests and post-tests.

REVIEW OF RELATED RESEARCH

Research on reading attitudes was fully reviewed by Alexander and Filler (1976), identifying important variables which are related to reading attitudes such as self-concept, parental influence and home environment, teachers and classroom atmosphere, gender, intelligence, achievement, socioeconomic status, and student interests. Research by others (Greenberg, 1970; Walberg & Tsai, 1985; McKenna et al., 1995) has supported the salience of certain variables.

Several researchers have developed conceptual models of attitudes toward reading (Mathewson, first developed in 1985 and revised in 1994; Ruddell & Speaker, 1985; Liska, 1984; McKenna et al., 1990, 1995). These models have included both cognitive and affective aspects such as feelings about reading, readiness for reading, and evaluative beliefs about reading. Mathewson viewed attitude as a causal agent both in the decision to read and during the process of learning to read. Liska identified three factors which affect attitude: the readers' beliefs about reading and its outcomes; the act of reading itself; and the reader's beliefs about the social expectations of others and the motivation to conform to them (taken from McKenna, 1994). McKenna builds on this model and suggests the importance of three major areas: beliefs about subjective norms (culture, home, peer group, environmental factors); beliefs about the outcomes of reading (environmental, competing feelings about other activities); and the effect of reading experiences—both direct and indirect. Several researchers suggest that there are interactions among social, environmental, and affective states in the acquisition of reading attitudes.

Many researchers agree that motivation is related to attitude and several of them have identified what appear to be "powerful motivators" in home, school, and peer environments. Most of the studies have used standardized reading attitude instruments to try to relate attitudes to aspects such as gender, ability, achievement, and self-concept. Several motivators which have been identified include role models, providing time to read, having reading choices, and sharing reading with "book buddies" (Bromley, 1994). Cramer and Castle's 1994 book, *Fostering the love of reading: The affective domain in reading education*, presents "a collection of articles that represent the best in current thinking about a wide range of issues related to reading motivation." (p. v) McKenna's chapter, "Toward a Model of Reading Attitude Acquisition," reviews prior models of Mathewson, Liska, Fishbein and Ajzen, and proposes a new model based on their work and previous research. McKenna's model shows each causal relationship, and then discusses the supporting research in four main areas: beliefs about subjective norms; beliefs about the outcomes of reading; and the effects of reading—both direct effect of reading experiences and indirect effect on reading attitudes. Some sample research findings documented by McKenna on "subjective norms" include:

> (1) In the United States, evidence abounds that girls tend to harbor more positive attitudes toward reading than do boys.
>
> (2) The pattern of girl dominance may also be related to achievement. Evidence that girls establish and sustain an early advantage in reading ability suggests that sex-based differences in attitude may derive from differences in ability.
>
> (3) The relationship of ability to attitude is well documented.
>
> (4) The range of environmental pressures that affect reading attitude acquisition includes:
>
> - differences among students in grades three to five depending on whether they lived in a university town, the inner city, or a rural setting (scores were successively lower in this order);
> - kindergarteners had already reached relatively well-informed attitudes even before schooling (based on) the frequency of being read to at home and the extent to which parents modeled reading as a leisure activity;
> - positive relationships between reading attitude and socioeconomic status. (McKenna, 1994, pp. 32-33)

Concerning beliefs about the outcomes of reading, McKenna suggests, in his model, that attitude is influenced by beliefs about what will happen if an individual engages in reading based on both environmental factors and prior reading experiences. Some examples of research findings he presents about these beliefs include:

> (1) Dissatisfying results will lead to successively worsened attitudes (and the reverse).
>
> (2) Though positive reading experiences may result in more positive attitudes, this will happen only if environmental factors are positive.
>
> (3) As children grow older, more leisure alternatives are open to them, and reading must compete, often causing the attitude of even the successful reader to be subject to decline during higher grade levels.
>
> (4) It is clear that certain practices can be effective in halting or reversing the decline, such as reading aloud to students, using high-quality literature, avoiding denigrating reading-group placement, providing metacognitive training, openly discussing students' beliefs, stressing links between literature and students' lives, and using questions to activate prior knowledge. (McKenna, 1994, pp. 33-34)

McKenna (1994) also presents research evidence of direct and indirect effects of reading:

> (1) A teacher can influence attitude positively in indirect ways; for example, by establishing a library corner in the classroom and providing opportunities to use it.
>
> (2) The prospect of rewards can have a direct impact on intentions by reducing the attractiveness of competing options and increasing the probability that a student will decide to read. (p. 35)

He is careful to point out that "Little evidence exists concerning the efficacy of incentive programs in changing reading attitudes. There is little doubt, however, that they can change behavior and induce students to read." (p. 35) His model predicts that these rewards (incentives) may improve attitude when other conditions are met; for example, whether it was a successful reading experience.

The use of reading "histories" by Carlsen and Sherrill (1988) caused them to suggest that positive influences in creating readers included the availability of books, being read to, having role models, having choices of reading materials, and having opportunities to share reading. Anderson, Wilson, and Fielding (1988) identified several factors in the school setting as influential in making readers: access to books; use of incentives/awards; reading aloud, and providing time to read in school. Johnson and Gaskin (1992) provided evidence that use of a variety of instructional strategies, including the acceptance of students' opinions and choice, could produce positive results. Many of these activities (access to books, student choice of books, use of incentives/awards, teachers reading aloud, and more time to read in school), were initiated in the 30 schools as part of the REAP project.

Reading Attitude Instruments

There have been many attempts to design and test instruments to measure reading attitudes of elementary school students, including the work of Estes (1971), Heathington (1979), Dulin (1979), Tunnell, Calder, and Justen (1988), and more recently, McKenna and Kear (1990), McKenna, Kear, and Ellsworth (1995). Tunnell called for the need for a "quick and reliable method of assessing student reading attitudes that will efficiently measure attitude changes as a result of specific classroom strategies." (p. 147) After constructing and testing such a reading attitude instrument, he suggested, "one should not expect students to have poor attitudes toward reading. It may be that even average or below average readers still have neutral or slightly favorable attitudes." (p. 147) Earlier, Estes had recommended administering such a scale on a pretest and post-test basis (October and May) so the teacher can note changes in attitude toward reading (Estes, 1971). McKenna and Kear (1990) reported on the development of their instrument called the Elementary Reading Attitude Survey (ERAS); their research with the instrument both produced standardized scores, and tests of validity and reliability. They tested the ERAS with 18,128 elementary school students from 95 school districts representing 38 states, with representative subjects on the basis of gender and ethnic distribution, and with estimates of each student's reading ability. The ERAS instrument was chosen for the current study and will be described more fully in a later section.

Studies using these instruments have examined reading attitudes and behaviors of students for the purpose of learning whether they are motivated to read and the factors relating to different levels of motivation. Alexander and Filler (1976) found that attitudes declined steadily from a generally favorable attitude in the early grades to a generally neutral to poor attitude in the secondary grades. McKenna, Kear, and Ellsworth (1995) also found that attitudes decline over the elementary grades. McKenna concludes: "...as children mature and as more and more leisure options compete with reading, positive attitudes toward reading will on average worsen." (p. 941) McKenna found that girls have more positive attitudes than boys. Constant failure in reading and its relationship to self-concept has been identified as a deterrent to positive reading attitudes (Alexander & Filler, 1976; Cothern & Collins, 1992).

Most of this research has been done by reading experts and educational researchers without much consideration of the book access factor which could be operationalized by measures such as the use and quality of school and public libraries, and access to classroom collections. Only a few studies which have tested reading attitudes have also examined specific classroom reading activities such as: giving time for reading, having teachers read aloud, and promoting reading role models. Most studies have, at most, examined one factor such as "book floods," instituting time for reading in school through Sustained Silent Reading (SIR), or providing classroom libraries (mostly in primary classrooms). Several researchers have validated tests of reading attitudes with measures such as children's use of the library (often measured by having library cards) or reading scores.

Several factors which this researcher has identified, in two previous reading motivation studies (Fitzgibbons, REAP 1 Evaluation Study, 1990; REAP 2 Evaluation Study, 1993), as important in the motivation of readers include:

(1) access to attractive and popular books;
(2) student involvement in selection of books;
(3) provision of time and encouragement of reading during school day;
(4) use of incentive and award programs;
(5) creation of a reading/literacy environment in the school and home;
(6) recognition of role models including parents, siblings, teachers, librarians, peers, and "celebrities."

In other studies, these factors have been shown to be more or less significant dependent on grade level, gender, and the ability of the student. Certain factors such as teacher behavior, classroom atmosphere, and type of reading instruction have not been sufficiently controlled in many of these studies, and can only be suspected of being related to student reading attitudes and behaviors. More research is needed to show relationships of background variables (home, environment, and classroom) and individual student variables (gender, ethnicity, and ability) on reading attitudes and behaviors.

METHODOLOGY

Description of the Instrument

Reading attitudes of students were measured by a standard instrument, the Elementary Reading Attitude Survey (ERAS), which tested two different dimensions of reading attitudes: recreational reading and academic/school reading. The ERAS instrument was chosen for several reasons: it had novelty appeal in its use of the cartoon character, Garfield, who is familiar and interesting to a broad age group; it was easy to introduce and complete; the developer had computed national norms for grades 1 through 6; and it had been tested for reliability and validity in previous studies. Permission to use the instrument had already been granted. The ERAS uses a "meaningful, attention-getting, student-friendly response format" (McKenna & Kear, 1990, p. 627) depicting the cartoon character in four facial/body expressions (very happy to very unhappy) as a way of responding to a series of statements about reading which begin with the phrase, "How do you feel about...." The ERAS is a 20-item, 4-node, pictorial rating scale. There are two subscales (each with ten items), one measuring recreational reading, the other measuring attitude toward reading for academic/school purposes. Each item is scored from 1 to 4 represented by Garfield's frowning face (1) to a broadly smiling Garfield face (4). The instrument uses a summated rating scale similar to a Likert scale. According to McKenna and Kear, "the decision to use an even number of scale nodes, thus avoiding a neutral middle choice, was based on research suggesting that subjects often use a middle option to avoid committing themselves, even when clear opinions exist." (1995, p. 944) Total scores can range from 10 points (least positive attitude) to 40 points (most positive attitude) on each subscale or 20 to 80 on the combined score. McKenna and Kear had found that the two subscale scores, recreational and academic (school) reading attitudes, were moderately correlated (r=.64, McKenna & Kear, 1990).

Although the instrument was not designed for use with students in grades above grade 6, it seemed appropriate for grades 7 and 8 as well, thus providing one instrument to be used with both the elementary and middle school students for comparability purposes. A few questions on the instrument may be less appropriate for the older students. A copy of the instrument and directions for its use can be found in McKenna and Kear's 1990 article.

Procedures

The REAP 3 project began in Fall 1993 and continued throughout two years, ending in Spring 1995. The decision was made to use pretesting and post-testing to assess student reading attitudes, with the two testing times matching the initiation of the project and its conclusion (Fall 1993, late Spring 1995). All students in the appropriate grades (grades 4-7) in the selected 20 elementary schools and 10 middle schools participated in the pretest during Fall 1993 as the project was initiated. Instruments and directions were sent to each school by the REAP project director with instructions to return them to the same office. Only students who would be in the school/project for the two years were given pretests (for example, in elementary schools, only grades 4 and 5 if the school included sixth grade).

In the analysis, students are identified by their pretest grade; it is important to recognize that each respondent completed a post-test two full academic years later. For example, fourth graders took the pretest early in their fourth-grade year and completed the post-test at the end of their fifth-grade year. Individual responses were transferred to coding forms and several scores were computed: one for recreational reading, one for academic (school) reading, and a total score. For the elementary school respondents, standardized scores (percentile rankings) had been compiled by the instrument developer, but since there were no comparable scores for seventh and eighth-grade students, this ranking was not used.

Response Rate

The return rate was excellent since the attitude testing was considered part of the evaluation of the total REAP project. However, due to the characteristics of these schools with "at risk" students (with high mobility and absenteeism), probably only one-half of the instruments could be matched with pretest to post-test. Even with this problem, instruments were received and matched for 26 schools (17 elementary and 9 middle schools). Instruments were never received from two elementary schools, and another elementary school's respondents had to be eliminated because pretest and post-test could not be matched (only first names were written on tests). Responses from one middle school were excluded from the multivariate analysis due to the low number of respondents. All instruments with several missing responses were also excluded at the time of the coding since total mean scores could not be computed for those respondents.

A total of 2410 matched instruments were available for analysis. There were 901 student respondents from elementary schools, 441 girls and 460 boys, with the following breakdown by grade level: 673 fourth graders and 228 fifth graders (grades at pretest time). There were 1509 student respondents from middle schools, 822 girls and 687 boys, including 180 fifth graders, 443 sixth graders, and 886 seventh graders.

Statistical Analysis

Two separate analyses were completed: one for elementary schools and one for middle schools. Two statistical procedures were used. First, descriptive statistics with means and standard deviations were computed using SPSS-PC program (version 6.1), producing bar graphs to display the three sets of mean scores (recreational attitude, academic/school attitude, and full reading attitude) for both pretest and post-test, with breakdowns by gender and grade level. Second, multivariate analyses were run using both SPSS-PC's MANOVA program (version 6.1), and their new General Linear Model (version 7.0). Multivariate analysis allowed analysis of complex relationships and interactions between the dependent variables (two tests—pretest and post-test, and two reading attitude scores—recreational and academic scores) using a model involving repeated measures with between-subject factors, and within-subject factors. The General Linear Model procedure was run as a more powerful tool which "can fit repeated measures of within-subject models including doubly multivariate repeated measures models involving multiple measures at each time point or under each combination of conditions." (SPSS, p. 1) These procedures were designed to replace the MANOVA procedure and handle a variety of "messy data situations." (SPSS, p. 2)

A full factorial analysis was completed; then a Stepdown procedure eliminated nonsignificant factors and interactions when possible until the most simple model with all significant interactions was found. If the dependent variables are ordered, it is possible to test for group differences of variables adjusting for effects of other variables using this Stepdown procedure.

The same procedures were used to analyze both the elementary and middle schools separately, though the values changed for each group dependent on the number of schools and the number of grade levels. For example, for the middle schools, the variables included nine schools, two sexes, three grades, two READ scores, and two TEST scores. In the elementary schools, the variables included 17 schools, two sexes, two grades, two READ scores, and two TEST scores. In both elementary and middle schools, between-subject factors include schools, grades, and sex while within-subject factors include TEST and READ which are both repeated measures.

ANALYSIS AND FINDINGS[1]

Elementary School Respondents

The elementary school sample included 901 respondents from 17 elementary schools. The number of respondents from each school varied from a low of 22 to a high of 117. There were 460 male and 441 female students in the respondent group including 673 in the fourth/fifth-grade group and only 228 in the fifth/sixth-grade group. In all the data analysis and graphs, students are identified by their pretest grade; it is important to recognize that each respondent completed a post-test a full academic year later. For example, fourth graders took the pretest and are then identified as the fourth-grade group in both the pretest score and the post-test score (which is completed as they end the fifth grade).

The complete set of mean scores (for both pretest and post-test) for all elementary school respondents is presented in Tables 1A and 2A, with breakdowns by recreational attitudes, academic/school attitudes, and the full reading attitude score. A breakdown is shown by gender (males and females) in Table 1A, and by grade level (grades four and five) in Table 2A. It is interesting to note the high standard deviation scores indicating a wide range of student responses.

Overall male attitudes toward reading are similar for both recreational and school reading while females are considerably more positive toward recreational reading (Table 1A). There were no differences between the scores of fourth graders and fifth graders at the time of the pretest: total mean scores of 59 were found for both fourth and fifth graders (Table 2A). The subscores for recreational and academic reading attitudes were similar by grade level with recreational scores about 2 points higher than those for academic reading. Post-test mean scores show a minor decline on all three scores.

Attitudes toward recreational reading.

Tables 3A and 4A display the results of the recreational reading attitude subscale compared first, by gender; then, by grade level. Though females are more positive (32 on pretest, 30 on post-test) toward recreational reading than males (29 and 26 respectively), the decline in score between pretest and post-test is similar (between two and three points) (Table 3A). Both fourth and fifth-grade pretest scores are similar on recreational reading attitudes (30 and 31 respectively); however, the fifth graders' post-test scores go down more as they complete sixth grade (a drop of nearly four, down to 27) as compared to the fourth graders who only drop two points to 28 as they complete fifth grade (Table 4A).

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[1] For clarity, all decimals within the text have been rounded to the nearest whole number.

Attitudes toward academic/school reading.

Tables 5A and 6A display the pretest and post-test scores of students toward academic/school reading, again comparing these scores by gender and grade level. Females are slightly more positive than males (30 compared to 28) at the pretest level; their post-test scores show an equivalent drop of approximately 3 points (Table 5A). Comparing fourth and fifth graders, it can be seen that pretest scores are similar (29 compared to 28) but fifth graders show a somewhat greater decline in scores by the end of sixth grade (a drop of three points) as compared to the fourth graders at the end of fifth grade (a drop of two points) (Table 6A).

Full reading attitude scores.

Tables 7A and 8A show the total reading attitude scores also compared by gender and grade level. Examining the pretest scores by gender, it can be seen that females feel considerably more positive toward reading; the total mean score for females was 62 as compared to 56 for males (a difference of six points). The drop in both male and female post-tests is similar (about five points), so females end with still more positive attitudes (Table 7A). Comparing fourth graders as they complete fifth grade and fifth graders as they complete sixth grade, there are almost identical pretest scores, but the latter group's post-test scores are seven points lower compared to the fourth/fifth-grade group's decline of only 4 four (Table 8A).

It is important to note that all of these scores are positive, above the midpoint of the scale, rather than either at the low end or at the middle level (which would signify some indifference toward reading). Though the scores did not increase overall at the end of the REAP project, it is important to consider why this might have occurred. There was a difference in the time of the year: pretest at the beginning of the school year, post-test at the end of the second school year. There was no control of differences between the two year time period; intervening variables of different teachers and different classroom reading activities would have occurred. Previous research has shown a considerable decline of reading attitudes as students proceed through the grades at the elementary level, with the most positive attitudes at the first grade level. The scores would probably have declined more without the emphasis on reading brought to the schools through the REAP project. Other studies which have tried to analyze the "effect" of whole language instruction have also found decreases in reading attitudes over grade levels. This study is the only one, to date, that uses the ERAS instrument as part of a two-year, longitudinal study.

Multivariate Analysis

Results of the multivariate analysis of variance, using the Stepdown procedure, for the elementary school respondents are displayed in Table 9A which shows several significant F test results. Full information (F scores, the two degrees of freedom, and the significance levels) is presented in the Table and only significance levels will be repeated with the discussion. All results with a p-value of less than .05 ($p<.05$) were considered significant in the analysis.

The highest level of interactions indicates that school is the most significant factor in explaining differences in respondents; this is evident in the following list of significant interactions:

School x READ x TEST	($p<.0001$)
Grade x School x TEST	($p<.0001$)
Gender x School x TEST	($p<.026$)
School x TEST	($p<.0001$)
School x READ	($p<.0001$)

This means that there were more differences in student attitudes explained by the school of respondents than by their grade, gender, differences in the TEST variable (pretest, post-test), or the differences in READ scores (recreational, academic subscales).

There were significant between-respondents main effects by gender ($p<.0001$), by grade ($p<.003$), and by school ($p<.0001$). Also significant within-respondents main effects were found for both the READ variable (recreational, academic subscales) ($p<.0001$), and for the TEST variable (pretest, post-test) ($p<.0001$).

Other significant interactions not involving school included:

Gender x READ	(p<.0001)
Grade x TEST	(p<.012)

Though there is a significant interaction between gender and READ, there is not such an interaction between gender and grade level. Grade level *does interact* significantly with TEST (p<.012) meaning there are significant differences across grade levels on test scores. It is important to note that 12 of the 17 elementary schools responding only had fourth-grade pretests and this same group took the post-test in fifth grade, so grade level was not a variable in those schools.

Further tests using the Estimated Marginal Means, a GLM procedure, explain the details of the significant factors found in the multivariate analysis. For example, for elementary school respondents, females generally have more positive attitudes toward reading. They also have more positive attitudes toward recreational reading than academic/school reading. The fourth/fifth-grade group is more positive toward reading than the fifth/sixth-grade group. The respondents' pretest scores are higher than their post-test scores, but this varies by grade level. For example, there is only a slight drop between the pretest and post-test of the fourth/fifth-grade group but a greater drop in the scores of the fifth/sixth-grade group. Recreational reading attitude scores are higher than academic/school reading attitude scores. Scores of both the TEST variable and the READ variable differ a great deal in the different schools. For example, in one of the case study schools, male pretest scores are the highest of all schools; even at the post-test level, that score is the fourth highest mean score. In that same school female pretest scores are the second highest score of all the elementary schools, and at the post-test level, their score is the fifth highest mean score (out of 17 schools). For a second case study school, the fifth/sixth-grade group has the highest pretest and post-test scores, a very unusual pattern.

Table 9A-2 is a table of the significant interactions for each of the 17 elementary schools in order to ascertain any unique differences in schools. This would be most useful to individual schools.

Table 1A
Elementary Schools

	Pre-Test Attitude Scores			Post-Test Attitude Scores		
	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
Recreational						
Male	28.57	6.17	30	26.12	6.28	30
Female	32.12	5.13	25	29.57	6.07	30
Academic						
Male	27.59	6.44	30	25.36	6.45	30
Female	29.82	6.08	27	27.42	6.02	30
Full Score						
Male	56.17	11.32	60	51.48	11.76	60
Female	61.94	10.28	51	57.01	11.00	59

Male n=460
Female n=441

Table 2A
Elementary Schools

	Pre-Test Attitude Scores			Post-Test Attitude Scores		
	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
Recreational						
4	30.24	6.03	30	28.13	6.48	30
5	30.53	5.75	25	26.84	6.10	29
Academic						
4	28.78	6.50	30	26.73	6.31	30
5	28.40	5.92	27	25.30	6.26	29
Full Score						
4	59.01	11.45	60	54.88	11.78	60
5	58.93	10.42	48	52.14	11.29	57

Grade 4 n=673
Grade 5 n=228

Table 3A

Recreational Reading Attitude Scores

most negative = 10 most positive = 40

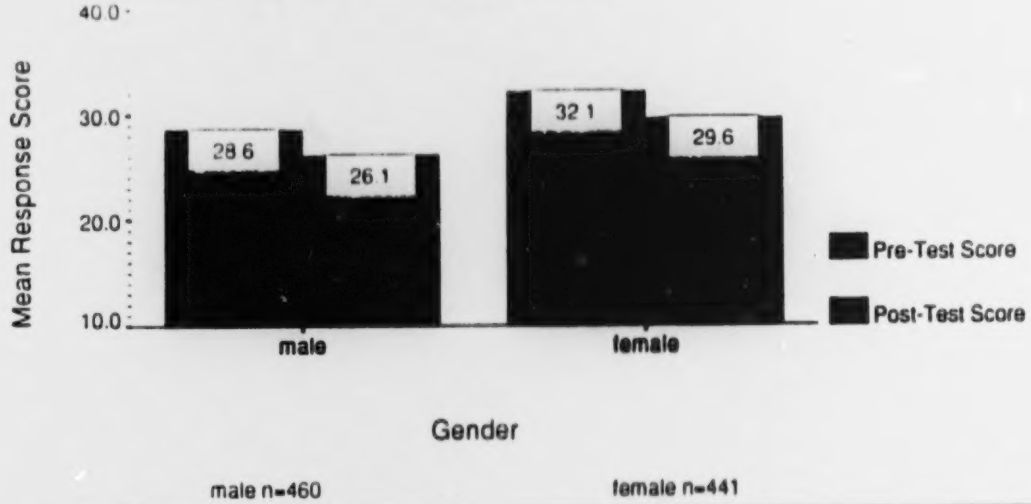
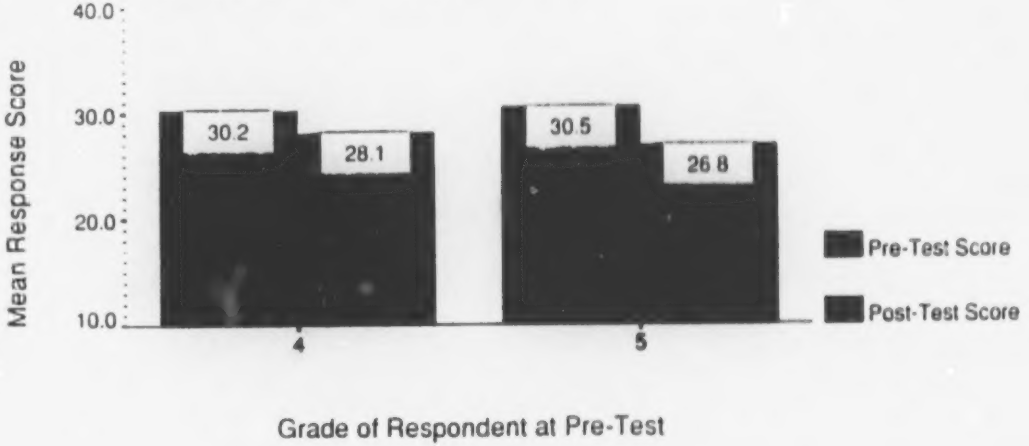


Table 4A

Recreational Reading Attitude Scores

most negative = 10 most positive = 40

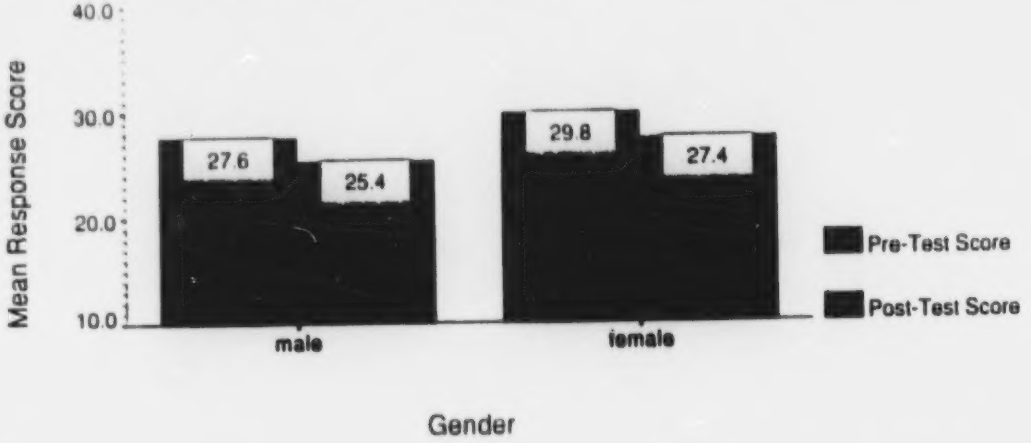


4th n=673 5th n=228

Table 5A

Academic Reading Attitude Scores

most negative = 10 most positive = 40



male n=460 female n=441

Table 6A

Academic Reading Attitude Scores

most negative = 10 most positive = 40

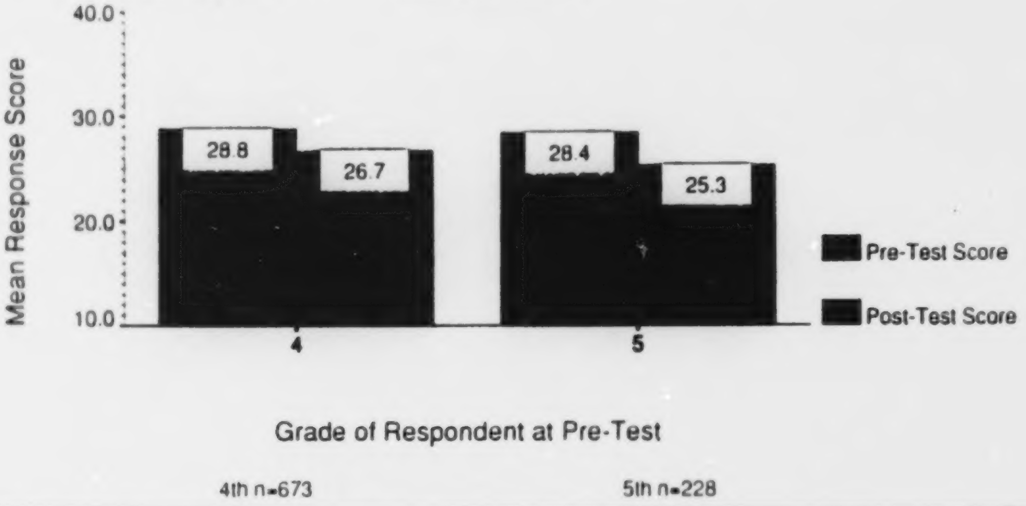
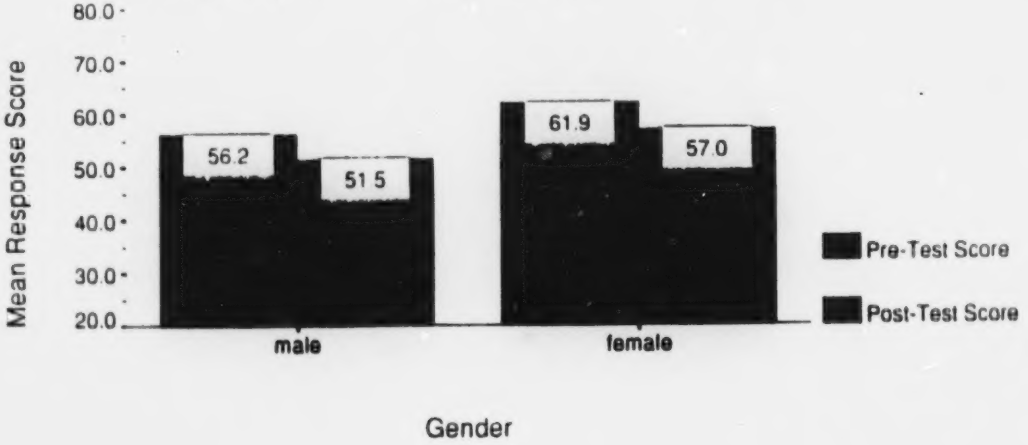


Table 7A

Full Reading Attitude Scores

most negative = 20 most positive = 80

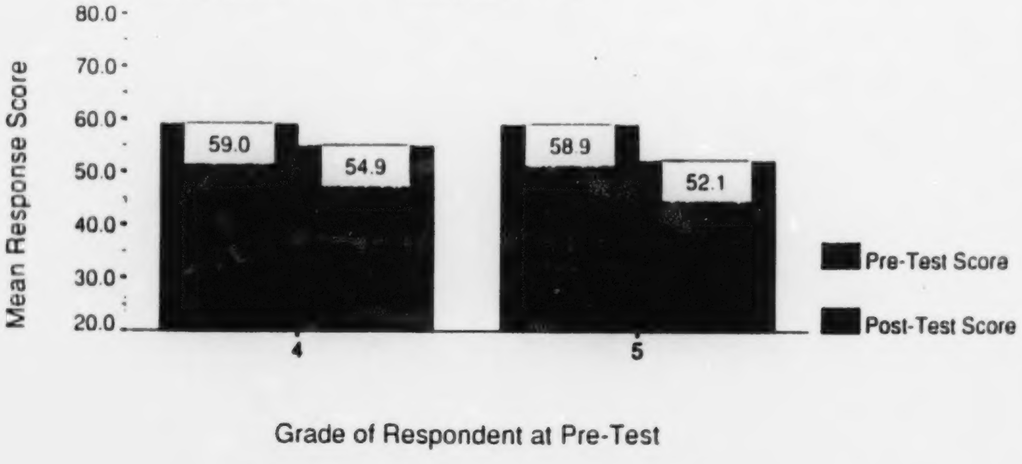


male n=460 female n=441

Table 8A

Full Reading Attitude Scores

most negative = 20 most postive = 80



4th n=673 5th n=228

Table 9A-1

Elementary Schools

Summary of Step Down Mutivariate Analysis of Variance

Summary	df	F	Significance
Gender	(1, 862)	62.71	.0001
Grade	(1, 862)	8.71	.003
School	(16, 862)	6.66	.0001
Gender by School	(16, 862)	.44	.971
Grade by School	(4, 862)	3.66	.006
READ*	(1, 862)	76.81	.0001
Gender by READ	(1, 862)	32.32	.0001
Grade by READ	(1, 862)	.41	.523
School by READ	(16, 862)	6.10	.0001
Gender by School by READ	(4, 862)	1.38	.146
Grade by School by READ	(4, 862)	.89	.470
TEST**	(1, 862)	124.32	.0001
Gender by TEST	(1, 862)	.53	.469
Grade by TEST	(1, 862)	6.30	.012
School by TEST	(16, 862)	2.90	.0001
Gender by School by TEST	(16, 862)	1.81	.026
Grade by School by TEST	(4, 862)	5.07	.0001
READ by TEST	(1, 862)	1.42	.234
Gender by READ by TEST	(1, 862)	1.73	.189
Grade by READ by TEST	(1, 862)	2.30	.129
School by READ by TEST	(16, 862)	2.63	.0001
Gender by School by TEST by READ	(16, 862)	1.44	.116
Grade by School by TEST by READ	(4, 862)	1.25	.288

The other interactions were found to be not significant and were not run as part of the Step Down MANOVA.

*READ is the factor composed of the recreational and academic reading attitude scores.

**TEST is the factor composed of the pretest and post-test scores.

Significance level is $p < .05$

Table 9A-2

Significant Interactions for Elementary Schools by School

Elementary School	Gender	Grade	READ	Gender by READ	Grade by READ	TEST	Gender by TEST	Grade by TEST	READ by TEST	Gender by READ by TEST	Grade by READ by TEST
1	X		X	X		X					
2	X	X				X		X	X		
4•			X			X			X		
6	X		X			X			X		
15•			X			X					
16•	X		X	X		X					
17						X					X
19•			X	X							
20•	X		X								
21•	X		X								
22•				X						X	
23•				X						X	
24•									X		
25•	X										
26•	X		X			X					
27•				X		X					
28	X		X			X	X				

•denotes that Grade was not a variable because these schools only had one Pretest Grade.

Additional significant interactions
School 17 Gender by Grade by READ by TEST

School 1, n=117 School 2, n=73 School 4, n=32 School 6, n=83 School 15, n=36 School 16, n=30
School 17, n=62. School 19, n=31 School 20, n=43 School 21, n=65 School 22, n=23 School 23, n=22
School 24, n=34 School 25, n=44 School 26, n=94 School 27, n=26 School 28, n=86

Middle School Respondents

There were ten middle schools participating in the student attitude study. One school was eliminated from the study because there were only 40 respondents compared to the other middle schools with responses being received from a low of 78 to a high of 253 respondents per school. A total of 1509 responses were available for analysis, including 687 males and 822 females at each of the following grade levels:

Grade five/six	180
Grade six/seven	443
Grade seven/eight	886

These numbers show that few of the middle schools had fifth grades and most had only seventh and eighth grades. It is important to recognize that the fifth-grade pretest is matched with those same students' post-test as they completed sixth grade; sixth-grade pretest with seventh-grade post-test, and seventh-grade pretest with eighth-grade post-test. In the following data analysis and charts, students will be identified by their pretest grade only. Some rounding of scores is done in the discussion of results for the purpose of clarity.

Tables 1B and 2B present the mean scores for all the middle school respondents, comparing pretest and post-test scores for recreational and academic subscores as well as the full reading attitude scores, for both males and females (gender) and by grade levels. These means ranged from a low of 21 to a high of 30. As in the elementary school respondents, there is a wide range of responses, indicated by the high standard deviation scores. In reference to the scale depictions of Garfield, this ranges from below the midpoint—close to the slightly frowning Garfield—to near the slightly smiling Garfield. Thus, the subgroup means varied from a somewhat negative attitude to a somewhat positive attitude. Females were more favorable toward recreational reading than academic reading while males felt about the same toward both. Scores were lower at each higher grade level.

More specifically, in Table 1B, male scores are over four points lower than female scores on the recreational pretest but only two points lower on the academic/school pretest, for a difference on the full reading attitude score of over six points. Post-test scores decline similarly between males and females with females still having more positive attitudes at the end of the second academic year.

In Table 2B, full scores of reading attitudes of middle school students varied by grade level at the time of the pretest: the mean pretest response of fifth graders' full score was 59; sixth graders, 56; and seventh graders, 52. This follows the general pattern found in previous research: that students have a less positive attitude toward reading as they progress through the grades. If you look at the two subscales at the pretest level, they show that attitudes toward recreational reading are only slightly more positive than academic/school reading: grade five (30 compared to 29), grade six (28), and grade seven (27 compared to 25).

At the middle school level, full scores were lower on the post-test for each grade level, but the largest drop was evident for the sixth graders who began with an overall mean pretest score of 56 and by the end of the second academic year, as seventh graders, their mean post-test score dropped to 47, a nine point drop. At the fifth/sixth-grade level the drop was seven (from 59 to 52); at the seventh/eighth-grade level, the drop was eight (52 to 44). There were minor differences in the rate of decrease between pretest and post-test scores on recreational and academic attitudes. For recreational scores, the fifth grades dropped from 30 to 27 (three points) and for academic scores, 29 to 25 (four points). Sixth graders had almost identical pretest scores on the two: 28 on both recreational and academic; these scores dropped to 24 and 23 respectively, the same rate of decrease in both and almost identical scores at both pretest and post-test levels. For seventh graders, the scores began at 27 (recreational) and 25 (academic) and dropped to 23 (recreational) and 22 (academic), drops of approximately four and three respectively.

Attitudes Toward Recreational Reading

Tables 3B and 4B display the results of the recreational reading attitude subscale, compared by gender and then by grade level. At the pretest level, females score approximately five points higher than males (30 compared to 25) and at the post-test level, the difference is similar (four points, 25 compared to 21) (Table 3B). Comparing grade level differences on the recreational scale, there is a gradual decrease between the pretests of fifth, sixth, and seventh graders (30, 29, and 27) and a more substantial drop on the post-tests (27, 24, 23 respectively) (Table 4B).

Attitudes toward Academic/School Reading

Comparing Table 5B with Table 3B, it is evident that males have identical attitudes toward academic/school and recreational reading (25) with a similar decrease on the post-test (four points). Females are somewhat more positive toward recreational (30) than academic/school reading (27) and show a similar decrease in attitude at the post-test level (four points). Looking at grade level differences (Table 6B), academic/school pretest scores begin somewhat lower than recreational scores, especially at the seventh-grade level, and decline more at the post-test level, except at the seventh/eighth-grade level where there is less of a decline on academic/school post-tests. The group moving from sixth grade to the end of seventh grade has a greater decline (five) in academic/school post-test score than the other groups, compared to a decrease of four between fifth/sixth graders, and nearly four between seventh/eighth graders. All academic/school reading post-tests are below the midpoint of the scale (25) and indicate some indifference to academic/school reading.

Full Reading Attitude Scores

Females are substantially more positive than males, seen in Table 7B, on their pretest reading attitude scores (57 compared to 51); the rate of decline in post-test attitude is slightly higher for females (nine points as compared to eight for males). Most of this difference between males and females was on the recreational scores, with females more positive than males by four points. Scores on the academic/school subscale were more similar between males and females. Though girls were initially more positive on both attitude subscales than boys, their drop in score was approximately the same or slightly greater than that of the boys.

Comparing grade level differences in Table 8B, though there is a steady decrease by grade level on pretest scores (59, 56, and 52), there is an uneven rate of decline in attitudes from pretest to post-test scores, with declines of seven for fifth/sixth graders, nine for sixth/seventh graders, and eight for seventh/eighth graders.

To summarize the results of the middle school respondents' reading attitudes, females have more positive attitudes than males, especially on recreational reading. Males do not differ much on their attitudes toward recreational and academic/school reading. Scores between pretest and post-test decline somewhat more for females. For the students at the middle school level, there seems to be a decline in reading attitudes, especially toward academic/school reading among the sixth/seventh graders.

Multivariate Analysis

Results of the multivariate analysis using the Stepdown procedure for the middle school respondents are displayed in Table 9B which shows several significant F test results. Full information (F scores, the two degrees of freedom, and the significance levels) is presented in the Table and only significance levels are mentioned in the discussion. All results with a p-value of less than .05 (p<.05) were considered significant in the analysis.

At the highest level of interactions, school is the most significant factor that explains differences in respondents, as shown in the following list of significant interactions:

School x Gender	(p<.03)
School x READ	(p<.0001)
School x TEST	(p<.0001)

This means that there were more differences in student attitudes explained by the school of respondents than by their grade level, gender, differences in TEST (pretest, post-test) or the differences in READ scores (recreational, academic/school subscales).

Besides this second order of interactions, the only third level of interaction (also including the school variable) which was close to significance was: School x Gender x Read (p<.052).

Significant between-respondents main effects were found for school (p<.0001) gender (p<.0001) and for grade level (p<.0001). Yet the interactions between gender by grade, and between school by grade were not significant. There were also significant within-respondents main effects found for both the READ variable (recreational, academic subscales) (p<.0001) and for the TEST variable (pretest, post-test) (p<.0001).

Other significant interactions not involving school included:

Gender x READ	(p<.0001)
Grade x TEST	(p<.02)

This means that gender did affect differences on the two subscales of reading attitudes, and grade level did affect differences on the pretest and post-test scores.

Further tests using the Estimated Marginal Means, a GLM procedure, explain the details of the significant factors found in the multivariate analysis. Like the elementary school respondents, females have more positive attitudes toward reading. Male attitudes are the same toward both subscales of reading attitudes (recreational and academic/school), while females show more positive attitudes toward recreational reading. Pretest scores are generally higher than post-test scores for the middle school respondents. At the middle school level, reading attitude scores decline at each grade level, both on the pretest, and with a somewhat greater decline by grade level on the post-test. Recreational reading scores are only slightly higher overall; this is accounted for by male scores which reflect a similar attitude toward both recreational reading and academic/school reading. Schools vary tremendously in their pattern of reading attitude scores. For example, one of the case study middle schools had the second highest pretest score and the highest post-test score, with one of the smallest declines in score.

Table 9B-2 is a table of the significant interactions of each of the nine middle schools to ascertain any unique differences in schools. This would be most useful to individual schools.

Table 1B
Middle Schools

	Pre-Test Attitude Scores			Post-Test Attitude Scores		
	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
Recreational						
Male	25.43	6.07	30	21.44	6.61	30
Female	29.68	5.89	30	25.32	6.44	30
Academic						
Male	25.41	6.28	30	21.54	6.43	30
Female	27.44	5.62	30	23.05	5.75	30
Full Score						
Male	50.84	11.09	59	42.99	12.07	60
Female	57.12	10.29	60	48.37	10.82	60

Male n=687
Female n=822

Table 2B
Middle Schools

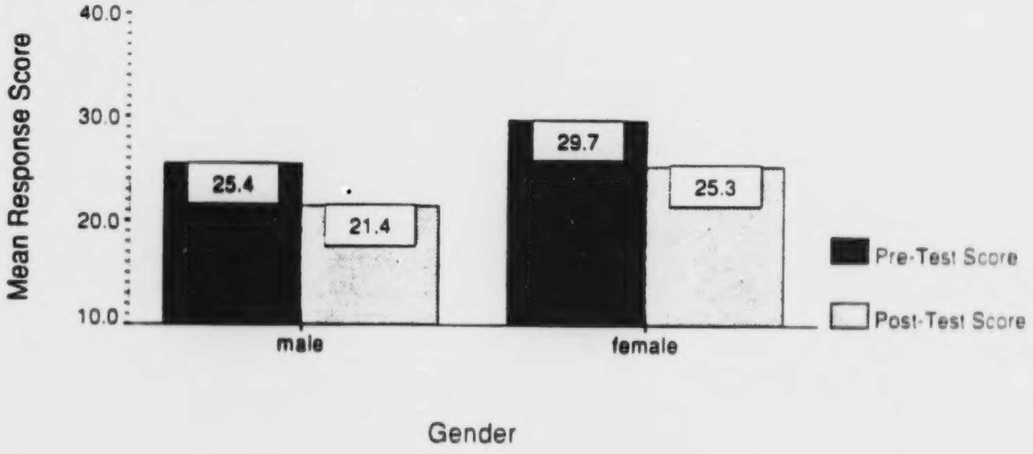
Pre-Test Attitude Scores				Post-Test Attitude Scores		
	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
Recreational						
5	29.83	5.71	30	27.17	6.49	30
6	28.49	5.97	29	24.15	6.34	30
7	26.95	6.50	30	22.52	6.80	30
Academic						
5	29.01	5.61	29	24.82	5.67	30
6	27.93	5.63	30	22.63	5.56	30
7	25.30	5.97	30	21.73	6.32	30
Full Score						
5	58.84	10.03	55	51.99	11.11	60
6	56.41	10.44	56	46.78	10.55	60
7	52.25	11.17	60	44.25	11.94	60

Grade 5 n=180
Grade 6 n=443
Grade 7 n=886

Table 3B

Recreational Reading Attitude Scores

most negative = 10 most positive = 40

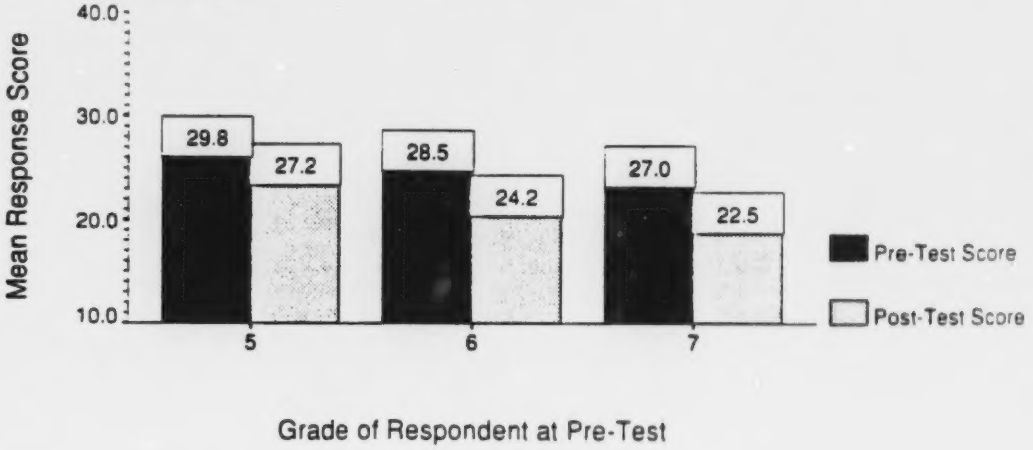


male n=687 female n=822

Table 4B

Recreational Reading Attitude Scores

most negative = 10 most positive = 40

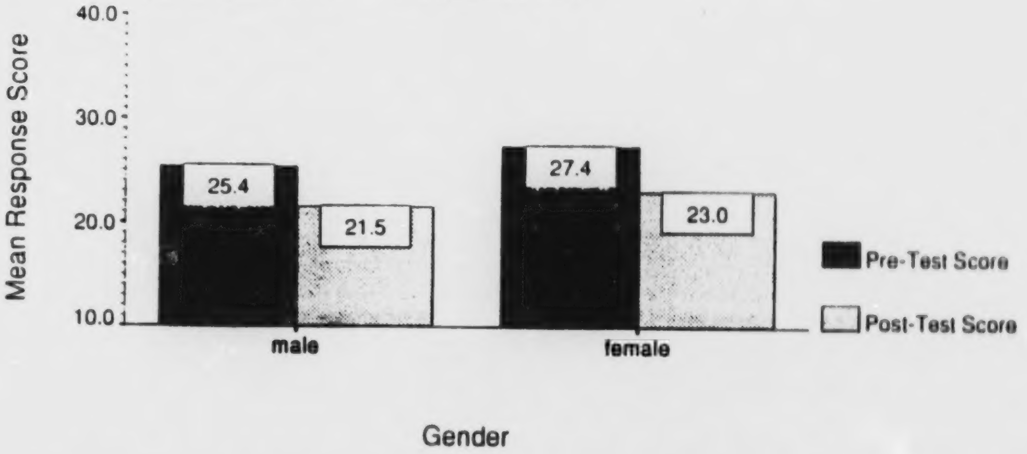


5th n=108 6th n=443 7th n=886

Table 5B

Academic Reading Attitude Scores

most negative = 10 most positive = 40



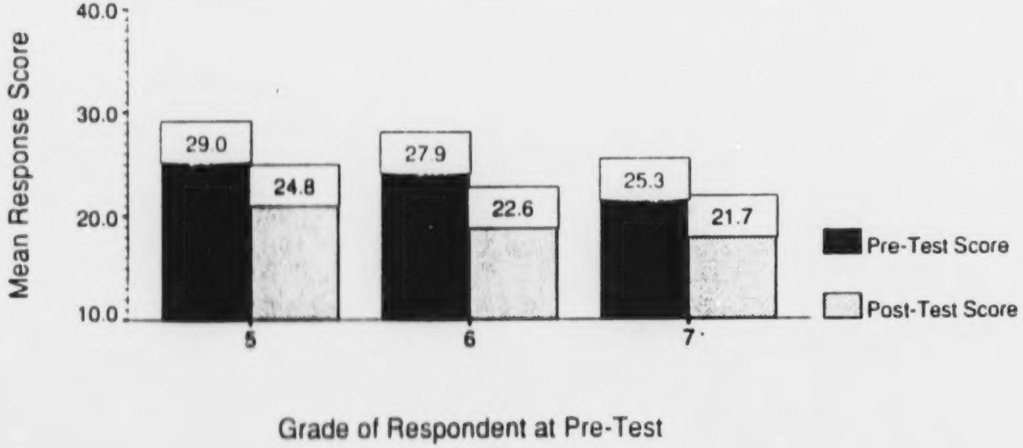
male n=687

female n=822

Table 6B

Academic Reading Attitude Scores

most negative = 10 most positive = 40

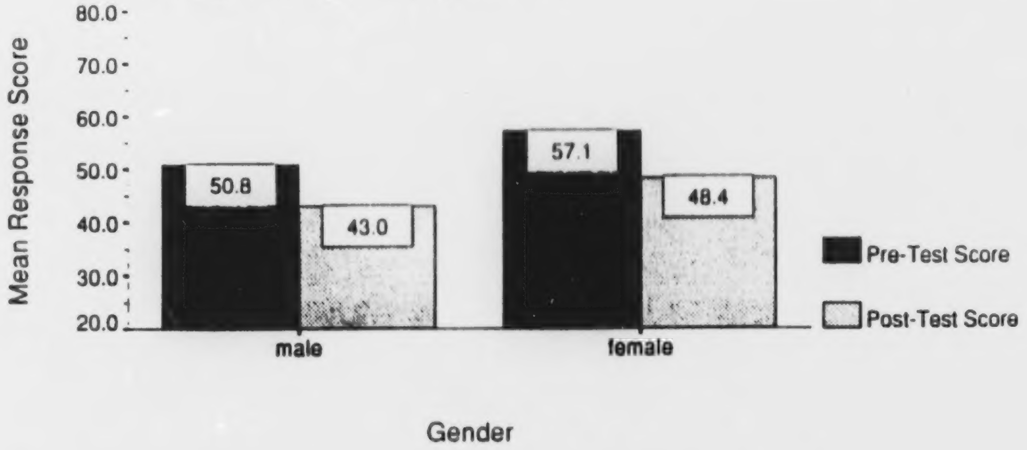


5th n=108 6th n=443 7th n=886

Table 7B

Full Reading Attitude Scores

most negative = 20 most positive = 80



male n=687 female n=822

Table 8B

Full Reading Attitude Scores

most negative = 20 most positive = 80

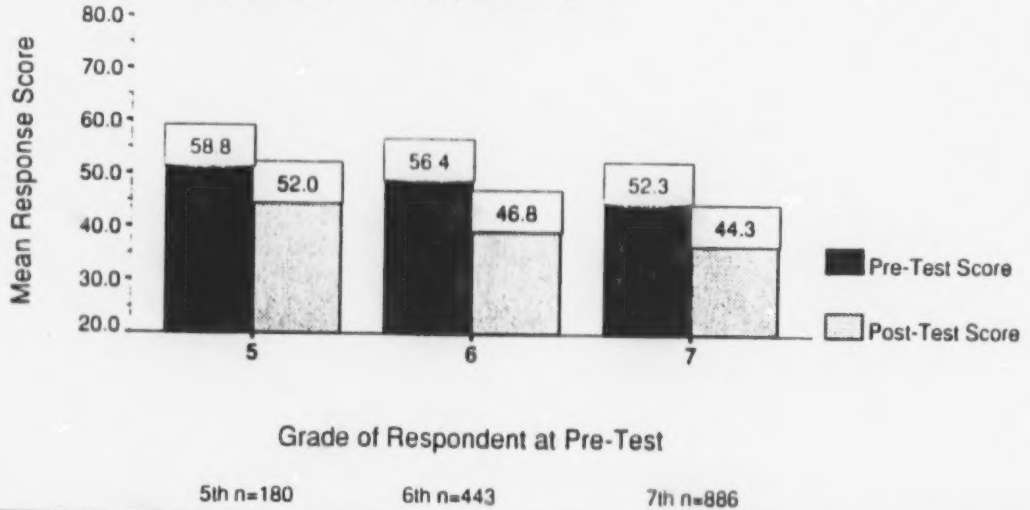


Table 9B-1

Middle Schools

Summary of Step Down Mutivariate Analysis of Variance			
Summary	df	F	Significance
Gender	(1, 1489)	136.32	.0001
Grade	(2, 1489)	41.07	.0001
School	(8, 1489)	8.50	.0001
Gender by School	(8, 1489)	2.04	.039
READ*	(1, 1489)	46.82	.0001
Gender by READ	(1, 1489)	82.41	.0001
Grade by READ	(1, 1489)	1.65	.191
School by READ	(8, 1489)	18.60	.0001
Gender by School by READ	(8, 1489)	1.93	.052
TEST**	(1, 1489)	358.22	.0001
Gender by TEST	(1, 1489)	.82	.367
Grade by TEST	(2, 1489)	3.66	.026
School by TEST	(8, 1489)	5.64	.0001
Gender by School by TEST	(8, 1489)	.76	.636

The other interactions were found to be not significant and were not run as part of the Step Down MANOVA.
*READ is the factor composed of the recreational and academic reading attitude scores.
**TEST is the factor composed of the pretest and post-test scores.
Significance level is $p < .05$

Table 9B-2

Significant Interactions for Middle Schools by School

Middle School	Gender	Grade	READ	Gender by READ	Grade by READ	TEST	Gender by TEST	Grade by TEST
5	X	X	X	X		X		
7*	X		X	X		X		
8	X	X	X	X		X		X
9	X	X	X	X		X		
10	X			X		X		X
11*			X			X		
12*	X		X			X		
13*	X		X	X		X		
14	X	X	X	X	X	X		

*denotes that Grade was not a variable because these schools only had one Pretest Grade.

Additional significant interactions

School 7	READ by TEST
School 8	READ by TEST
School 9	Gender by READ by TEST
School 12	READ by TEST
School 13	READ by TEST
School 14	READ by TEST

School 5, n=200 School 7, n=159 School 8, n=208 School 9, n=253
School 10, n=183 School 11, n=78 School 12, n=147 School 13, n=119
School 14, n=162

Limitations of the Study

The specific questions on the ERAS had been designed and tested for use with grades one through six in elementary schools. The current use of the instrument at the middle school level is an extension of its use without further testing for reliability or validity, and results should be used with caution. It may be that the academic/school questions and resulting subscale are not appropriate for middle school students. The recreational scale appears to be quite suitable for this level. There are no standard scores developed for any grades above the sixth grade.

A potential problem with the current study is that the timing of the pretest and the post-test may make the results less reliable. For example, one principal mentioned that at the middle school level, students' attitudes were most positive at the time when the preview book collections were brought to the school; this was the pretest time in some schools. In addition, the post-tests were administered during the last two months of school before summer vacation when student attitudes might be at their lowest. The combination of more positive attitudes during pretesting and less positive during post-testing may partly account for the general pattern of attitude decline over the two-year time period.

The longitudinal view of students' reading attitudes over a two-year time period is valuable; however, it must be recognized that there are several uncontrolled variables in the study, such as different teacher styles and changes in reading instruction over the time period.

DISCUSSION

The current study presents general information on student reading attitudes. This study was not able to "prove" that the REAP projects in the schools improved student attitudes toward reading. It should be recognized that in general, these students' attitudes were favorable about reading as most scores were at or above the midpoint level of the Garfield scale. The decline in score may be attributed to the normal decline in interest in reading as students move into higher grade levels, a finding of the most recent research on reading attitudes. The specific scores and the level of decline from the pretest to post-test need to be compared with other studies of those schools employing similar interventions and those without interventions.

At both the elementary school and middle school levels, the difference between schools was the most significant factor in explaining differences in respondents' reading attitudes. At the elementary school level, there were three high level interactions involving school: school by TEST by READ; school by TEST by grade; and school by TEST by gender. At the middle school level, there were no significant interactions at this level of interaction, but school was involved in several two-way interactions: school by gender, school by READ (recreational, academic/school scores), and school by TEST (pretest, post-test scores). Gender was a significant main effect as well at both levels, and it did affect the READ scores (females and males differed in their recreational and academic/school reading attitudes). Gender differences were not significant by grade level at either school level. Grade level was significant by the TEST variable, indicating that pretest and post-test differed by grade level.

In both elementary and middle schools, females had more positive attitudes toward reading; their recreational reading attitudes are more positive than their academic/school reading attitudes. The fourth/fifth-grade group was the most positive group at the elementary school level. A similar pattern was found at the middle school level: the fifth/sixth-grade group had the most positive attitudes, the sixth/seventh group was less positive, and the seventh/eighth-grade group was the least positive. This differs somewhat by school. In both the elementary and middle school groups, the pretest scores are more positive than the post-test scores, yet at the elementary level there is less of a difference though it differs by grade level with the fifth/sixth-grade group's post-test score dropping dramatically.

Though recreational reading attitude scores are more positive than the academic/school attitude scores, the scores differ less at the middle school level; this is accounted for by the pattern for males whose recreational and academic scores are almost identical.

Schools vary tremendously in their pattern of reading attitude scores which suggests that activities at the school, teacher quality, and school environment probably affect these differences. It is important to recognize that the REAP 3 schools were similar in several respects: there were large numbers of at-risk students, and the REAP activities (as interventions) were similar, including the influx of a large number of new, attractive, popular books and the initiation of these activities: Sustained, Silent Reading (SIR), teacher read-alouds, and classroom book collections.

It would also be useful to compare the findings of this study with the previous use of the ERAS instrument as well as with other studies of attitudes of middle school students. Important comparisons should be made on: grade level differences, gender differences, and introduction of specific reading activities such as SIR, teachers reading aloud, and incentive programs. Other researchers have begun to explore the effect and relationship of "whole language teaching" on student reading attitudes and behaviors. Those studies should be reexamined to compare results with the current findings.

IMPLICATIONS FOR SCHOOLS AND TEACHERS

The study was invaluable in showing the relationship between attitude testing and actual descriptions of children and teachers about student reading during both written surveys (teachers only) and on-site interviews for five case study reports. The multi-operational aspect of this study was one of the most important aspects of the study: that is, the verification of the same information via a written, standardized attitudinal instrument compared with the actual words of students describing how they felt about reading (at home, at school, with friends); and the comparison of teachers' written surveys with their face-to-face descriptions of how they felt student attitudes and behaviors had changed. For this presentation, it is essential to show that students described themselves as "liking reading" and spending quite a bit of time reading at home, except for summer vacations. Teachers felt that having greater access to books in school libraries and in classroom libraries, as well as letting students help choose these special books, was the primary benefit of the project. Almost all of them felt that students' attitudes toward reading had become more positive, and that students were reading more now that more classroom time was spent on reading activities.

The attitudinal part of the survey was valuable in itself in the differences it elicited between grade levels, between genders, and especially between schools. Though the researcher needs to spend more time trying to theorize from the multiple data sources and to posit generalizations which need to be retested, there are some indicators in the findings that can be useful immediately. For example, male students seem to feel the same toward school and recreational (home) reading; this seems to indicate that more time is needed in school for what one usually labels "recreational reading." Some of the specific attitudinal questions (especially in the recreational reading section) elicited results which need further consideration. Two questions illustrate this point most effectively:

How do you feel about reading during summer vacation?
How do you feel about going to a bookstore?

The results of the question concerning summer vacation elicited the most negative responses. Pretest and post-test scores by grade level include: 2.5 compared to 2.3 for 4th/5th graders;
2.6 compared to 2.0 for 5th/6th graders (elementary school), 2.4 compared to 2.3 for 5th/6th graders (middle schools), 2.4 compared to 2.0 for 6th/7th graders, and 2.3 compared to 1.9 for 7th/8th graders. The attitude scores ranged from a high of 2.6 at the beginning of 6th grade to a low of 1.9 at the end of eighth grade.

The question about "going to a bookstore" elicited the most positive responses of all the questions: a range of scores from highs of 3.5 - 3.1 for pretest scores and a low of 2.6 for the post-test score at the end of eighth grade.

The role of the public library, and the need for the school to cooperate with them, in encouraging participation in summer reading clubs and programs, would appear to be of vital importance. Earlier studies, including Barbara Heyns study in 1978, have indicated that the most influential activity on students' academic development at these grade levels is reading during the summer (and use of the public library), even more than going to summer school or taking a trip with the family. Yet we have not built on this knowledge to create stimulating summer reading programs which are attended by many of the most "at-risk" students. Teachers and school librarians must work with the public library, the families, and the students themselves to encourage participation in summer reading.

These "at-risk" students, on the other hand, feel most positive about "going to a bookstore." We need to ask why that is so attractive an activity? It is not difficult to understand part of the appeal of the bookstore as a leisure time activity—attractive displays of popular and new books with enough copies for anyone who visits, the way books are displayed and arranged, the attractiveness of new books, the stress on popular authors and series, etc. Today, bookstores often have cafes, programs for children, and profitable sales—at least for the chain bookstores. Which of these activities can the school library (and public library) "copy"? Certainly, they could buy more copies of popular materials, more paperbacks, but even more importantly, they could merchandise books more effectively through displays, grouping books by genres (as well as popular authors), and provide many attractive and annotated Booklist.

Unfortunately, this standardized instrument did not ask, how do you feel about going to the school library? (or the public library?) There is no way to make direct comparisons. Could school librarians be seen as "credible" readers' advisors both in formal ways (as booktalkers and providing Booklist) and in informal ways—let me tell you about a great new book that has just arrived.., or since you enjoyed that book so much, are you aware of the other books by that author.., or, on that genre.., or on the same theme? Are school librarians seen by teachers as resources for "knowing good books"? Is the school librarian viewed as a reading role model for students and teachers alike? And perhaps, most of all, do they provide access in both the library and the classroom to books that appeal to students to read for fun as well as for specific assignments?

FUTURE RESEARCH

There are several results that have raised questions for future research. Why is it that almost all studies of student reading attitudes show that they become less positive by the end of the year, and at each grade level? What are the differences between what teachers (and the curriculum) expect during the primary grades (when attitudes are generally positive) and the upper elementary grades when attitudes toward school reading generally decline? What are the unique factors in the schools that have students with the most positive attitudes toward reading? Some of these factors can be teased out of the current studies in comparing the case study schools with the attitudinal results for students in these schools. These studies are ongoing.

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CRITICAL THINKING: TOOLS FOR INTERNET INFORMATION EVALUATION

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ABSTRACT

This qualitative study describes strategies employed by sophisticated adult World Wide Web users as they evaluate authentic Web information with the purpose of adapting these strategies for children in K-12 settings. The participants in this study followed think-aloud protocols and answered interview questions about two Web documents containing numerous misinformation devices. Evaluative strategies from these verbalizations were extracted and analyzed. Findings include a list of strategies and a description of three evaluative "styles." Finally, suggestions for the use and teaching of these strategies in elementary school through middle school are made.

INTRODUCTION

As World Wide Web access expands into schools and homes, children will likely encounter the misinformation often found in this medium. Are children, often alone and unsupervised, equipped to sort good information from bad? What specific vulnerabilities and dangers do they face? How can educators equip them with the evaluative skills they need to sift through this new wealth of information?, Purpose

The literature establishes misinformation as a potential problem for Internet users (Neavill, 1993; Viehland, 1993). The primary cause of this situation is an almost universal lack of gatekeeping and central authority. As a safeguard against nuclear attack, the Internet was built without a centralized controlling authority to distribute the information base throughout the United States (Stoker & Cooke, 1995). Because of this lack of control "anybody can publish anything." (Neavill, 1984, p. 87) Without editorial control, documents flawed by bias, mistakes, lies, scholarly misconduct, or any of a number of other flaws, can circulate freely and instantly. Two related but less important causes of the misinformation problem are anonymity and hacking. Because the Internet allows anonymity, authors publishing misinformation fear no reprisals.

Hackers often break into government servers, intercepting, interrupting, and changing data without discovery (Stephens, 1995). If hackers can access data, they can change it. University servers, the most complete repositories of online information, are particularly vulnerable to hacker attack because of inadequate preventive measures (Coutorie, 1995).

Although censorship and technological screening have been suggested as possible solutions to the misinformation problem, the most practical approach is for readers to evaluate Web information themselves (Breivik, Senn, & Gee, 1989). This issue is a practical as well as a philosophical one. It is unlikely that professional information managers can keep pace with new information on the Web in their efforts to index, evaluate, and screen information. Screening software, while effective to a degree, cannot filter out all objectionable material or misinformation. Even if these measures were totally effective, the philosophical and legal issues of freedom of speech and individual interpretations of truth present insurmountable dilemmas. For now, Internet users must recognize the need to do their own sifting and evaluating of Web information.

Are Internet users equipped with the skills they need for such a task? Critical skills to evaluate Web information may or may not be similar to those needed for general information literacy. Little is known about information evaluation in any medium, and existent studies indicate potential difficulties. Grice (1975) theorizes that people tend to believe that most information is true, and this theory harmonizes with Gilovich's assertion that people do not evaluate all incoming information for efficiency reasons (1991). At least two researchers have noted a remarkably passive acceptance of misinformation in memory studies (Belli, 1989; Highhouse & Bottrill, 1995). Analyses Studies of scholarly misconduct demonstrate that have highlighted this problem in even the supposedly discerning academic community is prone to evaluative passivity arenas (Kochan & Budd, 1992). Others writers have compiled case studies and long catalogs of successful hoaxes in the mass media hoaxes (Bird, 1996; Fedler, 1989; Tamarkin, 1993).

A review of psychological and social psychological literature reveals several disturbing possibilities about the effects of misinformation. People seem highly vulnerable to the manipulation of superficial presentation characteristics. An illustration of this fact is that subjects tend to accept without question information presented by a person perceived as having high status or expertise without question (Petty & Cacioppo, 1986). In addition, readers rate texts with greater numbers of messages as being more believable than texts with fewer messages, regardless of message quality (Petty & Cacioppoe, 1984). Audience members are more likely to accept arguments greeted with the enthusiasm of their fellow listeners (Axsom, Yates, & Chaiken, 1987). In addition to these flaws in evaluative practice, people are vulnerable to the effects of misinformation may have disquieting manipulative effects upon memory. Loftus (1975) initiated a major trend in memory research with her discovery that witnesses of complex events exposed to conflicting misinformation after the event often reported the misinformation as part of the original memory. Anderson (1965) established that people tend to believe information presented first in a sequence, and disregard conflicting information presented later. These fragmentary and contradictory glimpses of how misjudgment and misinformation affects critical judgment and memory illustrate the fact that the poorly understood reader-misinformation interaction can potentially have profound results.

The few scholars who have studied misinformation in telecommunicated contexts report interesting findings. Aycock and Buchignani (1995), Hernon, (1995), and Viehland (1993)found a passive acceptance to misinformation in the electronic medium similar to that found by psychologists in other media. Sachs (1995) noted how the online discussion group he studied tended to reinforce the political biases of its readers. In addition, Aycock and Buchignani, as well as and Viehland, remarked upon how quickly and widely telecommunicated misinformation spread in their analyses of authentic online misinformation cases.

Several scholars and practitioners have published skill sets for online information evaluation (see, for example, Stripling & Pitts, 1988; Weisburg & Toor, 1994). Hernon (1995) asserts that Internet information is similar to information in other media in terms of quality. Thus, it is reasonable to assume that evaluative skill needed for online information differ little from skills needed for information in more traditional formats. However, this assumption has not been adequately tested. Also, as the literature shows, our knowledge of the thinking processes of readers as they encounter misinformation is fragmentary. One possible approach to this lack of knowledge is to examine the strategies of experts as they evaluate information. The purpose of this study is to describe the strategies used by sophisticated Web users as they make critical judgments about the quality of information found in authentic Web documents, and to adapt these strategies for use in K-12 settings.

For the purposes of this study, "misinformation" is defined as material presented as true although it contradicts facts presented in standard reference works. Information quality literature describes how authors can misrepresent facts through an array of linguistic tactics (see, for example, Lazere, 1982). These misrepresentations relate directly in some cases to the presentation manipulation findings described above. These linguistic tactics are labeled here as "devices of misinformation." The term "trigger" refers to the linguistic signal that marks the presence of a device. An information "problem" is a shortcoming of the information that can make it misleading, such as lack of currency or authority.

The following questions helped to shape the design of this study:

- What strategies identify effectively Web misinformation problems and devices? What clues (or "triggers") users to the presence of misinformation? What specific triggers are associated with specific devices?
- What characteristics commonly identify "reputable" or "reliable" Web documents?
- What is the nature of Web misinformation? What devices do Web authors use to purposely misinform? How do these devices differ from those used in traditional communication, if at all?
- How can the strategies used by sophisticated adults be adapted for younger information users?

METHOD

Data collection consisted of Web document selection and downloading, interviews, and observations of expert participants as they explored authentic Web misinformation documents. The project began with the location, downloading, and careful examination of 23 Web misinformation documents containing misinformation. Because it is difficult to escape the effects of personal bias in a study of this nature, A specific criterion was used during document selection. This selection criterion required that a document contain one or more of the devices of misinformation listed in previous work (Fitzgerald, 1997). (Still, it is necessary to admit that my personal beliefs ran strongly against the information contained in these documents.) Theoretically, information may contain devices of misinformation but still be valid. In general, however, authors of strong positions do not need to resort to such devices and avoid them because they lead to challenges from discerning readers. Therefore, misinformation devices are a fairly reliable means of identifying suspicious literature.

From these 23 documents, two were chosen for use in this particular project. The first document, which claimed that the Holocaust is a hoax and, contained a rich cataloging list of misinformation devices. The other document, a report attempting to legitimize parapsychology to support the commercial psychic service operating out of the same server, contained few devices but several major problems. Neither document was at all believable, in the researcher's opinion. Several other scholars and all participants in the study confirmed this assessment.

PROCEDURE

The hour-long audiotaped interviews and observations took place in a private office equipped with a networked Windows computer loaded with *Netscape 3.0*. Each session consisted of three phases: pre-interview, interactive evaluative task session, and post-interview. To begin, participants answered questions about pre-existing factors such as education, technological expertise, and bias about document topics. Next, they read each document in turn, followed think-aloud protocols as they read and answered assessment questions at completion. At the end of the session, the researcher debriefed each participant about the misinformation they had seen and answered any questions that occurred about the procedure.

The interactive task portion allowed participants to freely browse the two sample Web documents and simultaneously describe their thoughts. When the participant fell silent, or gave responses requiring further explanation, the researcher interrupted with probing questions. Participants were encouraged to talk as much as possible in a stream-of-consciousness manner. In addition, the researcher placed no limits upon the amount of time spent reading each document but explicitly stated that participants could read as little or as much of the document as they thought necessary. At completion, summary questions sought to uncovered specific judgments, reasoning processes, cognitive ambiguities, reasoning, and evaluative criteria.

PARTICIPANTS

Participants were recruited from personal colleagues at a major research university. Six graduate students, all with advanced Web expertise, participated in the study. Five of the students were enrolled in a doctoral educational technology program, while the sixth was completing a second master's degree in another field. All six had extensive experience with telecommunications and the Web. All but one were competent in constructing Web pages and writing HTML code. Three had participated in research projects directly related to Web information quality. Finally, four participants had backgrounds in the fields of communications, political science, advertising, and media production that gave them added expertise in media literacy. In sum, these participants were adequately qualified as Web information experts. Two were male and four were female. Ages ranged from 28 to 47.

It is important to consider pre-existing biases in relation to the subject matter of the two documents, the Holocaust and parapsychology. Without exception, participants believed in the reality of the Holocaust. Given the sensitive nature of the material to be examined, it was determined in advance that no participants were Jewish. Likewise, no participant believed strongly in parapsychology, although each one spontaneously indicated that they were open to its possibilities. It is quite possible that the summative evaluations of each participant are due as much or more to these pre-existing biases than to their evaluative strategies (Klayman & Ha, 1987; Lord, Ross, & Lepper, 1979). In the researcher's opinion, this limitation has little detrimental effect on the validity of the strategies voiced by each participant for two reasons. First, participants' verbalizations clearly demonstrate active strategy use. Second, it is also clear that four participants experienced mild disequilibrium when presented with provocative arguments and used, in part, evaluation strategies to relieve this disequilibrium.

ANALYSIS

The Web documents were analyzed thoroughly before interviewing began. This analysis prompted several probing questions asked after participants made their initial judgments. After three interviews, the researcher transcribed them and assessed methods and results. Because the interviews seemed to yield useful data, three more interviews were scheduled. Interview questions underwent minor revision during this assessment

After the completion and transcription of the interviews, all data, including interview transcripts, think-aloud transcripts, and observation notes, using open coding techniques, were analyzed. Next, the Web documents were reanalyzed after having reexamined the list of misinformation devices. During the second analysis, comparisons and parallels were drawn between devices found in the document, devices recognized by each participant, the triggers alerting participants to each device, and voiced evaluation strategies. Finally, member checks with four participants assured that strategies extracted from the transcripts matched participant recollections. In addition, a peer analyst, also an information expert, verified selected conclusions in a peer debrief. Trustworthiness of this data is further bolstered by the fact that most strategies appeared in the think-alouds of more than one participant.

FINDINGS

This study yielded three major results. First, the misinformation presented fooled no participant in an overall way. Second, as hoped, participants revealed valuable information evaluation strategies as they voiced their thoughts about the material they were reading, valuable strategies were revealed. Finally, no participant noticed all of the devices used in the documents. In several cases, participants were misled to a minor degree by a particular device. This report focuses on the second finding. The third finding requires deeper analysis and more data collection, and will serve as the focus of a later report.

A summary of the misinformation devices and problems found, their definitions, associated triggers, and strategies used by participants to detect them is presented in Table 1. As they described their strategies, participants often contributed valuable insights gathered through experience. One new misinformation device appeared through this sharing of collective wisdom. This device, dubbed the "circular reference" by one participant, Rachel, is native to the Web and allows the author to quote herself or himself without seeming to do so. In both misinformation documents examined in this study, authors included numerous links to other documents on the same server. When followed, these links usually led to documents by the same author. Several participants pointed out this device, and declared that they seldom gave much credence to references to documents residing on the same server. Another valuable tip contributed by Paul is to visit the front end of the server by deleting the end of the URL in *Netscape's* "open" dialog box and pressing "return." Visiting the front end in this manner can help to establish useful facts about authority and purpose through identification of the sponsoring organization.

Participants shared several unique terms for triggering mechanisms. Henry called them "red flags." Rachel described the trigger process as "danger, danger, a little robin sings." In Table 1, where available, interesting participant phrases describe particular triggers. It is not always possible to associate a trigger with a specific device through the verbalizations of the participants, a frustrating artifact of this particular interview protocol. Finally, Table 1 lists strategies used by participants to uncover devices successfully. Several of these strategies are extremely broad-spectrumed, such as "use checklist."

Three evaluation "styles" were evident in addition to one overall trait. Two participants, Rachel and Paul, showed numerous signs of using a "checklist" approach. The primary marker of this approach was the naming of features sought before their appearance in the text. A superficial survey of the document before reading began also characterized this approach. One participant, Linda, seemed to use a more affective approach. Affective terms characterized her reaction, and she discussed the "tone" and the underlying emotions of the document. Interestingly, her approach has merit because she found more, different devices than any of the other participants. Another approach seemed to be the "global" approach. Henry described his approach with this term, saying that he weighed an entire document and tried to balance the good against the bad to arrive at an overall evaluation. A final trend that seemed evident over all six participants is that the presence of a single problem or device is extremely damaging to the credibility of the document.

DISCUSSION

Limitations

This project did not yield comprehensive results for three reasons. First, the documents chosen contain a limited set of devices. Thus, the list of strategies generated is not comprehensive for all devices of misinformation. Second, this study did not accomplished data saturation in six interviews, and thus more interviews should be conducted with additional participants and different documents. Finally, the participants in this study were aware that they would be encountering misinformation during the interactive Web task. The literature indicates that people significantly detect more misinformation when warned to search for it, but often accept it passively otherwise (Baker, 1979; Belli, 1989; Highhouse & Bottrill, 1995). Markman (1979) and Markman and Gorin (1981) found a similar result with children. This forewarned condition was designed into the study, in order to isolate evaluative strategies from the problem of whether or not participants would recognize misinformation in the unprimed condition. Therefore, this study does not address a chief concern about misinformation.

Another obvious limitation is that findings based on data gathered from adults will be applied to children. However, at least one theorist asserts that the reasoning processes of children are essentially no different from that of adults, and children's reasoning errors are largely due to their lack of contextual knowledge (Carey, 1985). It is therefore reasonable to attempt a transfer of adult strategies to children. Evaluation of the outcomes of an instructional program based upon the results of this study may shed light upon Carey's theory.

Interpretation

Despite the limitations of this study, the results are useful. The data accomplished the primary purpose of strategy identification. Further, practical information contributed by the participants as well as

Table 1
Devices of Misinformation and Strategies to Detect Them

Device or Problem	Definition	Trigger	Strategy
Inadequate time investment (problem)	Document constructed with haste and posted before it could be adequately proofed	• typos • errors • sloppy visual	• Use these superficial indicators as one of many factors in judgment of overall quality
Opinion	Opinions voiced as if they were facts	Opinion marker words	Use checklist
Artificial inflation	Additional, extraneous material is added to legitimate information to make it seem more substantial	• "ideas are so small" (Paul) • "It's like they're trying to think of everything possible to persuade someone" (Paul) • "repeating themselves" (Cisco) • Statement of facts which seem overly obvious • Irrelevant material	• Look at size of document and balance against topic. • Checklist: repetition, obvious statements, points of minimal importance
Currency (problem)	Information is out of date	• No "last updated" info • Last update seems old • 1989 copyright on Web	• Checklist: copyright date, update, initiation date • Consult other sources to determine appropriate dates for topic
Commercialism	Information presented with the purpose of earning profits	• Domains: .com, .net • "Ridiculous fee" (Paul)	• Checklist: domain, solicitations • Try to determine purpose • Prefer sites which are not for profit AND request no money • Be cautious about revealing personal information at sites where your name may be placed on a telemarketing or mailing list

Circular Reference	Links lead to documents on same server	URL address indicates that the server is the same	• Disregard circular references because they add little or no credibility, although they may lead to additional information • Delete end of URL to examine front end of site
Inadequate Authority (problem)	Author has little or no expertise in topic of document	• No author named • No credentials given • No contact info • Contacts yield no results	• Contact author(s) • Look for credential info • Look for contact info whether you intend to use it or not • Cross-verify using other sources • Determine sponsoring organization
Expert	• An authority, whose area of expertise may be unrelated, is cited as an expert with a supporting opinion • An expert is quoted as saying something they did not say • An expert's words are taken out of context in a misrepresentative way	Mention of names of authoritative people, titles, professional associations	• Verify credentials of expert • Verify that the expert is quoted accurately • Explore the context of the quote
Appeal to tradition	The author supports a position as conforming to the way things have always been done	• Reference to Bible or other ancient texts • "That's the way we've always done it"	Learn to evaluate arguments
Reverse disclaimer	The author accuses opposing information to be misinformation, especially by naming the specific use of a misinformation device	"Attempt to discredit" (Henry)	Suspect extreme, emotional, and one-sided attempts to discredit a particular viewpoint

Inconsistency (problem)	Text contains conflicting statements	Feelings like "I don't understand this" or "This doesn't make sense"	• Examine causes of these feelings; they could indicate true misunderstanding or the presence of inconsistencies or logical fallacy • Examine how opposites are used
Stereotype	Characteristics of members of a group are generalized and derogatory	Derogatory comments about groups use of labels	Disregard information stated in stereotypical terms
Unsupported claims	Author fails to back up his opinions and claims with facts or references	"Casualness" (Henry)	• Look for cited references and links to different servers • Look for "and here's how we know" (Henry)
Bandwagon	An author supports an argument by claiming "everybody's doing it"	• High numbers on "hit counters" • References to others who agree	• Disregard hit counters because their numbers can be artificially inflated • High hit counter numbers are associated with entertainment sites • Evaluate arguments.
False dichotomy	Reduces a controversy down to a dichotomy and describes each perspective in extremely abbreviated fashion, omitting complicating, mitigating factors; possibly omits one or more perspectives altogether	• "To say there are only two sides" (Chris) • Absolutism: words like "never" and "always"	• Deliberately avoid making a decision until evidence is adequate. Chris calls this the "limbo mental state" • Look at how opposites are used
Unbalanced presentation	Evidence to support an opposing perspective is ignored	• Opposing positions are ignored. • Thought: "but what about ....[another perspective]	• Look for at least two perspectives • Consult prior knowledge and other sources

information about their evaluative styles may enhance the application of evaluative strategies in K-12 settings.

The checklist approach is an excellent and easily implemented starting point for information evaluation. Several good checklists are available (Schrock, 1996a, 1996b, 1996c; Wilkinson, Bennett, & Oliver, in press et al; Quinlan). However, many of the strategies used by participants in this study do not fit easily into the "yes, it's here/no, it's not here checklist approach. Therefore, the checklist heads a list as one of several strategies, all of which should be used in evaluation (Table 2). The emotional approach merits attention also, because sensitivity to the emotions expressed in a document may reveal devices and problems like stereotyping, bias, and emotional manipulation. The other evaluative style, global evaluation, and the tendency of the participants to discount an entire document on the basis of a single problem do not seem appropriate for K-12 application.

Hernon (1995) asserts that information on the Internet is "no better or worse" than information in any other medium (p. 136). This notion is intuitively countered by the probability that misinformation will continue to flourish due to the lack of gatekeepers on the Web. In corroboration of this theory, participants in this study all remarked about the high percentage of low-quality information on the Web. Rachel expressed the gatekeeper issue in these words: "The main difference is, with a book you know there had to be an editor at some point..[on the Web] you have to be your own editor." Chris expressed concerns about how easily electronic information can be altered, and raised the issue of political revision similar to that in Orwell's classic novel *1984* (1949). Linda talked at length about differences in cognitive reception of information between the Web and other media:

> If you've got something that's printed..you've got to do something. You have to throw it in the trash, you have to put it back, it's in your hand. So it's a little bit more tangible...When you're on the Web, you just [click] and it's gone. So much easier, so much faster, so much more immediate...In a way maybe that's a good thing because you're out of there really fast; but maybe that's a bad thing because as you're carrying this back to throw it in the trash or put it away you're reaffirming the fact that this is not the right information.

This former primary school teacher's observation resonates with the concrete operations theories of Piaget (1948).

The participants in this study constructed their strategies over years of practice and study. These strategies, carefully selected and adapted according to pedagogical principles, can be taught to children. Drawing upon the researcher's own K-12 teaching experience and the writings of educational theorists, suggested teaching strategies are listed below.

APPLICATION

Teaching evaluative strategies to children is challenging. Children cannot be instructed to search for abstract constructions like bias and logical fallacies without extensive preparation. Children of elementary school age are also uncomfortable with the disequilibrium caused by ambiguity, a necessary accompaniment to evaluative thinking (Piaget, 1948).

Another issue to be addressed is a philosophical one. At what age is it appropriate to teach children that people sometimes lie? Many parents and teachers believe that children should learn to trust adults and obey authority, and that discussions about lying will undermine this teaching. On the other hand, children witness untruths, fiction, and fantasy every day in many different media. More ominously, people eager to exploit the naive and the young through commercial and criminal means stalk the Internet. This troubling issue is far beyond the scope of this report, but teachers and parents must consider it before applying interventions for misinformation detection.

Specific strategies suitable for K-12 students appear in Table 2. Because of the complexity of several of these strategies, recommended grade levels for introduction are included. In addition, many of these strategies occur in varying levels according to the demands of the text. The teacher is the best judge of

Table 2
Essential Skills and Strategies for Web Information Evaluation

Skill/Strategy	Starting Grade	Devices/Problems Detectable through this Strategy
Checklist Answer yes/no to "Do you see_________?" (Fill in blank with triggers; see Schrock 1996a, 1996b, 1996c; Wilkinson, Bennett, & Oliver, in press)	3rd	Will uncover a variety of problems and devices, but inadequate for trigger-less problems and devices
Sift. Scan document, read first three sentences. Ask: "Is this page relevant?"	4th	Time-saving strategy naturally used by adults but often not by children
Ask question: What is the purpose of this site?	6th	Commercialism, bias
Think like an editor. Use what you know about writing. What should be changed in this document?	6th	Counteracts variety of devices; this is an alternative to the checklist approach which may work better for more experienced, older students
Don't make up your mind too soon. Identify different perspectives. Collect evidence in support of each one. Makes choices or decisions based upon the evidence. Even then, be open to new evidence which may change your decision.	8th	Counteract many devices that encourage instant decisions and manipulate first impressions
Build knowledge from a variety of sources	4th	Counteracts most devices and problems
Follow up on author credentials and references: • Check author's credentials and contact if possible. Does this author have expertise in this area? • Cross-check at least some of the references cited. Do they say what the author reports? • Follow at least some of the links. Do they lead to another server?	4th	Authority
Separate fact from opinion	3rd	Opinion stated as fact
Evaluate arguments. (Isolate and identify; identify fallacious ones and disregard)	5th	Logical fallacies and fallacious arguments (i.e., bandwagon and appeal to tradition)
When you hear yourself think "I don't understand" or "this doesn't make sense" stop and examine reasons for this thought	4th	May uncover inconsistencies and logical flaws; may prevent misunderstanding
Examine how opposites are used	5th	False dichotomy and inconsistency
Examine at how feelings are expressed. How do they show bias and purpose?	6th	Emotional manipulation; bias; stereotypes

when and how to apply differing levels of difficulty. Most of the strategies, especially argumentation, should be taught over a span of years.

It is vitally important that information literacy skills in general and these strategies in particular be taught in the context of subject matter material (Callison, 1993). Luckily, critical thinking strategies fit well with most content areas. Few topics could be more boring or incomprehensible to children than critical thinking or argumentation taught out of context. The best approach is to choose a subject area of current, controversial interest to the students in a given class, and integrate the suggested strategies into a unit about that topic. For example, a current educational controversy is whether or not school children should wear uniforms. People with fervent opinions speak hotly on both sides of this issue, and students feel powerlessly caught between. Opinions on this topic appear in newspapers, broadcast media, the Web, and Internet discussion forums. Students could explore this issue through all of these media. In the course of doing so, misinformed opinions and false information are bound to surface, and the strategies listed in Table 2 will necessarily come into play. This research should culminate in some public forum such as a debate or a special issue of the school newspaper. Projects such as these require a great deal of planning and time on the part of teachers and media professionals, but Dewey (1915) recommends them as an extremely most effective type of learning.

CONCLUSION

The series of qualitative interviews reported in this paper explored questions relating to Web misinformation and strategies for detecting such misinformation. Expert Web users served as a source of strategies for others who can benefit from their experience. Suggestions for adapting, applying, and teaching these strategies in K-12 contexts were made. Although these strategies may seem straightforward at first glance, the pedagogical and philosophical issues involved in teaching them to children include complicated pedagogical and philosophical issues. Nevertheless, educators must address these issues to prepare the students of today for their futures as information consumers.

This area of inquiry provides many opportunities for future research. Interviews of more experts with different documents containing different devices should reveal new strategies keyed toward specific devices. In addition, a repertoire of several strategies may better serve the different learning styles represented among different individuals. Two other vital but inadequately explored issues involve the spontaneous application of critical thinking and the long-term effects of misinformation upon memory. Presently, we know very little about why people decide to use evaluative skills in a given situation, provided that they have such skills. While psychologists have studied misinformation effects in respect to memory, few studies have addressed misinformation effects in an educational sense. The World Wide Web presents an excellent medium through which to study all of these issues.

While we know few facts about the effects of Web misinformation upon people, it seems likely that more misinformation will be published on the Web than in any other medium except for spoken communication unless some agency intervenes and begins to "police" the Web. As the only truly democratic medium except for spoken communication, such policing would spoil a valuable public resource. As it stands, educators should view the Web as an opportunity to further the vital critical thinking agenda. In the meantime, it is imperative that scholars and educators learn more about the effects of misinformation.

Debate continues over how the educational establishment can best foster the intertwined skills of critical thinking and information literacy. This research should contribute to educational efforts by describing strategies that successfully detect misinformation. Further, this exposure and analysis of Web misinformation samples may awaken users to the importance of critical evaluation and help to encourage the spontaneous application of critical reasoning.

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HIGH SCHOOL TO UNIVERSITY: WHAT SKILLS DO STUDENTS NEED?

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ABSTRACT

The problem of transferring library and information searching skills from high school to college is not new, but has become intensified in the last decade by the pressures of the information explosion, new technologies and budget reductions. While skills objectives for both high school and first year university are similar, the context and emphasis for the use of these skills differs in several respects. The survival skills students acquire in high school, particularly in the areas of periodical index use and computer search strategies, need to be expanded. Increased communication between high school teacher-librarians and academic librarians is recommended.

A constant complaint of university and college librarians for many years has been that first year students lack the skills to be able to use the university library and its resources successfully. Goodin (1991) includes quotes from 1981 and 1983 that "students...are, almost without exception, totally innocent of how a library works and do not have even a vague idea how to set about finding information they need or want when they arrive at a college or university." In 1985 Matheson notes the lack of basic skills needed to find information in the university library. In 1989 Krentz and Gerlach's report for the University of Wisconsin begins with another quote "Don't high school librarians teach library skills to students any more?" and McNeer (1991) states "Year after year, students arrive on our campuses unable to use our libraries." (p. 294) Other librarians (Adams, 1988; George, 1988; Altan, 1989; Knudsen & Orpinela, 1992) have treated the same theme from a different angle by offering their lists of the skills needed by first year students to use the academic libraries successfully. In the current library environment the problem has become even more pressing.

In the past decade, major waves of change have swept over the library instruction scene along with the rest of the education world. Librarians are trying to cope simultaneously with the information explosion, and the technology revolution. The amount of published information doubled every eight years, even back in 1984, faster for scientific and technical information (Large, 1984, as cited in Eisenberg and Spitzer, p. 115). Tools to access this information, like indexes and encyclopedias, expand in similar fashion. Moreover, sources of information formerly inaccessible have been flung open beyond the library by communications technology. The Internet offers vast quantities of material put out by any organization or individual that has a computer, a modem and access to a server. Librarians also have to learn to use the computer, video, sound, and other technology to deal with this information explosion. There are us new and different demands of costs, skills, esoteric terminology and a plethora of constantly changing systems.

Faced with these demands, educational aims have moved to promoting skills which will give students a strategy for coping with the overload of the new information age environment - those included in "information literacy," which can be defined briefly as knowing when one needs information, where to find information, how to evaluate information, and how to use information in decision making or problem solving. (Daragan & Stevens, 1996) Publications by researchers such as Kuhlthau (1988, 1991) have directed attention to the process by which students formulate questions, search for information and use it to create answers. Inherent in this is the ability to think critically, and to make informed selections from among the array of choices offered. Students also have to learn the skills needed by the new technology, particularly those which enable them to access material in electronic format, and incorporate these into their own work (see, for example, Loomis & Fink, 1993). At the same time the organization of materials in libraries still requires the old library skills.

> Learning to use the library was once a fairly simple activity for the user. Once the catalogue and library locations were comprehended, the user had a strong chance of becoming an independent and effective user. Library searching was relatively straightforward and the end-product was easily retrievable. Today this is just the start of the quest. The user is now faced with a vast array of search options, and a less definable set of retrievable outcomes...In addition the search engines used by the searchers are of many different designs and formats, placing even greater demands on the search inquirer. This is the context in which our library users now work. (Debowski, 1996, p. 144)

At the same time budget reductions force staff cutbacks even as needs grow. Few universities have mandatory or credit courses in library skills or staff dedicated to library instruction. Reference desk staff have little time to explain complexities to student after student who lacks the knowledge and skills required to negotiate the resources of the university library.

My frustration with this situation led me to hypothesize that one cause of this problem and also one possible solution might lie in the instruction in library skills students receive in high school. Encouraged by some teacher-librarians, similarly concerned about the future of their students, I undertook an investigation of the skills required of students in their final year of high school and those needed in the first year of university. My primary focus was on the Canadian province of Ontario, where students conduct independent research projects as part of their course work during their final high school year. I chose to investigate a broad spectrum of sources, covering not only a search of the literature, but also unpublished documents from schools and universities and postings and comments from Internet sources, particularly listservs of school and academic instruction librarians. I met with a discussion group of teacher-librarians and worked closely with four teacher-librarians from a varied group of high schools from different school districts in the Toronto area. I also conducted interviews with three groups of first-year students at York University.

In this paper, "universities" is used for universities and colleges, "academic libraries/ans" for libraries/ans in universities and colleges, "school libraries" for high school libraries, "teacher-librarians" for high school librarians, and "first year students" for students in their first year of a university or college.

OBJECTIVES FOR INSTRUCTION

To determine the extent to which teacher-librarians and academic librarians agreed on instructional objectives, I examined some 50 documents from school and academic libraries, mostly in North America. I had expected two different sets of objectives from these two environments, but found instead that the two lists were remarkably similar. These have been integrated as follows:

Information Literacy Skills

- know the steps involved in the research process from basic idea to final presentation;
- be able to formulate the search question and identify terms to use to search for information;
- know the different types of information sources available and where to go to find them;
- recognize the difference between fact and opinion, fiction and non-fiction, primary and secondary, Canadian and non-Canadian sources;
- employ critical thinking skills to evaluate information found for authority, bias, prejudice, stereotypes, relevance, timeliness;
- understand copyright, plagiarism and intellectual property;
- synthesize information found in relation to the topic, subject and audience;
- produce a well-constructed presentation;
- evaluate the product and process.

Library and Information-Handling Skills

- know the general layout, policies and procedures of library operation (circulation, reference, book stacks in call number order, etc.);
- know the different types and formats of materials found in a library, e.g., books, periodicals, reference materials, AV materials, maps, government documents, and how each is useful;
- use the library catalogue to search by author, title, subject;
- know the different elements of a catalogue record and what each is useful for;
- understand that periodical articles are searched through a periodical index;
- understand the elements of a periodical index citation, and what each is useful for; be able to find the journal on the shelf ;
- know the parts of a book, e.g., index, table of contents, and their uses;
- be familiar with different types of reference materials, e.g., encyclopedias, dictionaries, almanacs, and their uses;
- understand classification schemes and use them to find materials on the shelf;
- identify and use bibliographies for searching; understand the use of abstracts and annotations in bibliographies; be able to compile bibliographies in correct bibliographic form;
- understand key library terminology.

Computer Skills

- be able to operate a computer (keyboard, mouse, drop-down menus, hypertext links, print, download etc.);
- understand the basics of keyword searching and be able to broaden or narrow search terms
- understand Boolean logic ("and" "or" operators);
- use electronic mail;

Do first year students have these skills?

Krentz and Gerlach (1989) and Coupe (1993) note the scarcity of good surveys on the library skills and knowledge of students entering college. In Coupe's survey of John Hopkins freshmen, 97.5% of students knew a catalogue may be searched by title, author and subject, but only 60% could use them correctly in the online catalogue. While 44% knew that "and, "or" and "not" are Boolean operators, only 28% used them correctly. 86% knew what a bibliography is, but only 31.6% knew the difference between citations to books and citations to journal articles. And only 15% knew not to search the catalogue for journal articles.

Student Shortfalls as Identified by Academic Librarians

Comments from academic librarians, listserv postings and published articles (see, for example, Altan; Kunkel, 1996) show general agreement on problem areas. At the top of the list are:

Finding and using periodical articles. Few students even know a periodical index must be used to search for a periodical article, much less know the skills to select and search a variety of print and electronic indexes, interpret an index citation to find the journal on the shelf, and determine the value of the article.

Understanding the principles of computer searching. Many students assume that all that is needed to find information is to type in a word or phrase on "the computer." Most are familiar with the OPAC (the online public access library catalogue), but they do not understand the variety of other systems and databases available; they lack strategies to construct or choose good keywords, or find alternate search terms; they are uncritical of the information they find; they assume that their computer search has retrieved all possible records and that if they haven't found what they are looking for with their search terms, there is nothing on their topic in the library.

Understanding how libraries are organized, the various types and formats of materials found in the university library (microform is a special problem) and how to select appropriate tools to locate information

- *Defining the search topic*
- *Knowing who to ask for help*
- *Understanding controlled vocabulary* (subject headings, descriptors)—what it is, how to identify it, when to use it to search, how it differs from keywords
- *Distinguishing between citations* to books, periodicals and book chapters
- *Familiarity with library terminology* (e.g., reserves and reference, holds and holdings)
- *Understanding the principles of call numbers and classifications*, and how Library of Congress (LC) classification differs from Dewey Decimal System
- *Realization of the time and steps needed* to get good information on their topic.

High school teacher-librarians, reluctant to believe that their students are not equipped to cope with university research, postulate that the students without library skills and knowledge are those who did not have instruction in high school, and that the students presenting themselves with problems at the reference desk are those who do not know how to function on their own. It is undoubtedly true that academic librarians' perception is colored by dealing with students who lack any information-finding skills. In student groups at York University, 45% of students reported having had high school library instruction. These students reported less library anxiety and greater awareness of the reference desk as a source of help. (York student: "What I learned from high school is that you don't need to freak out because it's big—it's just a library.") However almost all reported the OPAC as their only information-finding strategy, very few knew of periodical indexes, and several did not seem to realize that Dewey call numbers were different from LC. Surveys of freshmen by Parenteau (1994) at Alverno College and Kester (1994) in North Carolina report similar or even more limited knowledge. It is also unlikely that the students who request help are the ones without skills. Other surveys (Altan, 1989; Valentine, 1993; University of Calgary, 1996) report that students who feel inadequate ask friends for help rather than approach the reference desk with a "dumb" question.

Possible Causal Factors of the Skills Gap

Why aren't the students better able to use university library resources? Because they find themselves in an unfamiliar environment with an enormously increased resource base that is far more complex, less helpful, and more demanding than they had ever anticipated.

The first year university experience is overwhelming for many students. Studies at the University of Guelph (Benjamin,1990) and the York University (1994) describe "the sheer magnitude of the discrepancy between high school and university as places to do academic work." (Benjamin, p. 26) In high schools, the environment is supportive, the teachers work closely with their students, provide assignments within the students' capability and watch out for those having trouble. The student may well find the university large, impersonal and uncaring. Workload and time pressures increase. Few faculty have pedagogical training. The assignments they give may be unsuited to the capacity of the students at this stage, and explain much of the students' difficulty in defining their topic (Leckie, 1996). Most faculty also assume that students possess the library research skills needed to do their assignment (Cannon, 1994). Other researchers (Kuhlthau, Turock, George & Belvin, 1990; McNeer,1991) have suggested that students' cognitive development may not be advanced enough to cope. Reference librarians are thinly spread, and, like faculty, few of them have pedagogical training.

The university library forms part of this intimidating and unfamiliar experience. A repeated comment of the York students (see also Collins, Mellon & Young, 1987, and others), was feeling overwhelmed by the size and scope of the operation of the academic library. In the university there are many service desks, often many libraries, each with a specialized function and different staff. Materials are arranged in separate sections which may be different from the arrangement they are accustomed to. There may be several banks of computer workstations. Usually it is fairly straightforward to find the OPAC, but where are the familiar CD ROM encyclopedias? Or the simple all-purpose CD-ROM periodical index? Here there are multiple bays of print encyclopedias, and large numbers of periodical indexes in print, CD-ROM and tape-mounted formats, all on different subjects, searchable in different ways and usually providing citations, not full text. Their unsophisticated keyword searches bring up hundreds of items or none at all. No one has structured the student's search to ensure success. Without a clear understanding of the process and its possible pitfalls, and an alternate set of strategies to try if the first does not work, the first year student is left helpless and frustrated. Anxiety and insecurity lead to the "cereal choice" and "hungry rats" syndromes described by Oberman (1991) and Keefer (1993). When confronted by too many choices the student ends up grabbing the nearest, and when desperation sets in the student forgets skills practiced in less stressful situations. The one thing they do expect is that in so large a library there must be some material on their topic.

As a result of the "information revolution," the focus of the teaching of information-seeking skills in schools has moved away from teaching primarily library and information-handling skills. For example library skills figure strongly in the 1982 *Partners in Action* document of the Ontario Ministry of Education and the 1983 document *Information Skills...a Continuum* from the school board of Northumberland-Newcastle. A decade later in the *Ontario 1995 Information Literacy and Equitable Access* document and the Northumberland-Clarington (same board as above) *Five-year Plan for Computer-based Technologies 1994-1999* the focus has shifted to broad information literacy issues and access to information technology. Ambitious objectives are set for computer skills in schools (see, for example, Eisenberg & Johnson, 1996). The widespread belief that all information is now available by computer fueled, by media reports, directs the funding priorities of politicians and administrators. Getting on the Internet is a major preoccupation and, indeed, the Internet does provide a gateway to a wealth of material otherwise unobtainable within the budget of the small school library. Electronic encyclopedias and simple periodical indexes now can be purchased at a cost little different from that of print materials and offer the prospect of easy keyword access with full-text printouts. The cost of maintaining print runs of periodicals is saved and frustration when the periodicals are not available in the library is eliminated.

The result of the information literacy imperative is to emphasize the problem solving process. The "Big Six" approach (Eisenberg & Berkowitz ,1992) is being adopted by many schools and school boards as the standard process for their information literacy program. The Big Six defines the problem-solving process as six main steps: task definition; information seeking strategies; location and access; use of information; synthesis; and evaluation of the process. As a formulation of the steps of the research process, it is easily understandable and corresponds closely to those put forward by other researchers. (Eisenberg & Brown, 1992) Much attention is now put on resources outside the library and on the presentation format, and much less on the skills required to locate and access the resources within the library.

In the university however, the focus is still the increasingly sophisticated skills needed to access the extensive and varied resources within the university library. The introduction of computers not has created a simplification of library searching but the need to integrate a new set of complex skills with the old, for print resource skills are still needed, particularly for historical material. Jakobovits and Nahl-Jakobovits (1987) make the point that a library's organization is determined by the characteristics and content of the material, rather than by the user, and King and Baker (1987) discuss how new technologies have added to this complexity. To find information successfully, the student must have learned to understand this organization and work within its framework. The most frequently-required presentation format will be the research essay. The Internet is not yet a major source of information for undergraduate courses because of its disorganization and lack of authority. "Spend a couple of hours on the Internet to save yourself a couple of minutes in the library" is a popular listserv signature file addition.

Teacher-librarians might object, quite rightly, that they have a much wider mandate than to prepare students for post-secondary education, and that information literacy skills will provide lifelong learning. Moreover, it is not that they have given up teaching their students library-related skills. All the schools that I visited assured me that the library and information-handling skills in the basic list were taught from the elementary school on; indeed, these were covered in the projects and assignments I have seen, but usually on a limited set of resources and in a structured setting. Library skills classes also usually specific to certain courses. With budget and staffing cutbacks, it would be possible for students to complete high school without having taken any library instruction at a senior level, yet think they have library skills. "We may be teaching just enough about using the library to make students think they don't need to know any more." (Farber, 1984, as cited in Wesley, p. 24)

We must also consider the learning characteristics of the students themselves. Collins, Mellon and Young (1987) and others have written about the need to consider diverse learning styles, cultural differences, and problems faced by recent immigrants and those with language difficulties. Every teacher knows only too well that learning does not necessarily follow teaching. A fascinating study is described by Moore (1995), in which researchers followed closely a group of 6th grade students as they carried out a library assignment. Their wide variation in skills application, task definition and ability to think flexibly still applies to students many years older.

Students are looking for the easiest and fastest way to complete their assignments (Valentine, 1993, p. 304). Why learn controlled vocabulary searching in school when the first keyword provides enough to get by? Why take a library skills workshop in first-year university if the professor does not require it for a mark? Students develop survival skills, which they use even when they know that better methods are available. They establish a library research routine for themselves and ask for help only when desperate. The University of Calgary survey indicated that the preferred, sometimes the only, method for students to find information in the library was to search the OPAC by keyword to find a call number of a work that looked relevant, then to go to the stacks and browse the shelf. This might account for the results shown in the studies of Coupe (1993) and others that the results of skills tests from seniors differed little from those of first year students. Since most computer searches will retrieve some hits, with no indication to the searcher how much information might have been retrieved with a better strategy, students feel they are competent searchers when actually they have a low level of computer searching skills. (York student: "I don't need library instruction. You just have to go to the computer and type in your search." Interviewer: "Which computer? Which database?" Student (impatiently): "Just *the* computer.")

What Skills Needed for University?

The skills students need are the skills teacher-librarians are already teaching them, if the objectives list given earlier is accurate. What they need in addition is to have a solid understanding of the principles behind the skills so they can apply them to a new, bigger, more complex environment. Key areas for understanding are:

- *a basic research process strategy* (yes, the "Big Six" is OK)
- *the basic principles of organization of materials and services in any library*
- *the different types and formats of materials in a large library and how to access them*
- the limitations as well as the advantages of computer searching and the principles of constructing good searching strategies
- *the process of finding periodical articles in both print and electronic formats*, from the selection of an index through the search process to the identification of the journal issue and finding it on the shelf. (Don't throw out your print indexes!)
- *the elements of a catalogue record, an index citation and a bibliographic citation*, whether for a book, journal article, book chapter or other material type
- *the use of controlled vocabulary for searching, and how to find good terms*
- *Strategies for critically evaluating materials found according to various criteria*
- *Principles of classification and call number construction* and how Dewey differs from LC
- *Terminology used in the academic library* (e.g., "library lingo" on the BI-L listserv)
- *Where to go for help for problems* (e.g., reference desk, circulation desk, instructor)
- *Alternate strategies* to try if the first does not work, and how to look for clues for further information

Toward a Smooth Transition

One obvious answer to a better transition to university is better communication between schools and universities. Altan (1989) and Krenz & Gerlach (1989) suggest the need to formulate joint standards and identify acceptable levels of skills and proficiencies at appropriate levels of development. In any area there will probably be conferences, committees, professional development days or other opportunities for librarians to meet. Arrange discussions with librarians from the other sector and invite them to your meetings. Ask to go to their meetings. Arrange visits to the other institution.

The teacher- librarian will need to give instruction for college-bound students a different emphasis from that of the rest of the high school population. They need to have practice in dealing with assignments that are not structured, and resources which are complex, especially print and electronic periodical indexes. One way of convincing high school students they need more than school library survival skills is to arrange to visit a local academic library to work on a project with them. In areas where university libraries are a key resource for high school students policies and procedures are usually worked out for use of the university library and provision of classes. Even in universities which discourage high school classes academic librarians may be receptive to providing a session to a group of teacher-librarians. Another increasingly available resource is virtual access to academic libraries via the Internet. Many libraries now have instruction pages on the Web in addition to catalogues and other information resources.

In some areas there are more formal links already set up to encourage cooperation (See, for example, Jesudason, 1993, Nofsinger, 1989, Wollter, 1989). If a linkage program is set up for your school/university, you can ensure that libraries are included in it. Waterloo, Ontario is an example of a formally organized cooperative program among school, university and public libraries (Waterloo County, 1994).

Academic librarians also have a role to play in smoothing the transition for students, particularly in simplifying and clarifying academic library procedures. In most universities however, their ability to provide more than minimal instruction and continuing contact with students is limited, and budget reductions are curtailing this even further. The best opportunity may well be at the high school level, in smaller settings where teachers have closer contact with their students, even though it is often difficult for teacher-librarians to persuade principals and teachers to provide opportunities for students to learn these skills. But the effort will benefit the student at university and after. As one academic librarian expressed: "It's the individual teacher-librarians who make a difference."

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INFORMATION SKILLS: THE REFLECTIONS AND PERCEPTIONS OF STUDENT TEACHERS AND RELATED PROFESSIONALS

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ABSTRACT

Part of the "information rich but knowledge poor" discussion concerns physical access to information, but another aspect relates to whether people can use the information they have accessed effectively. In education this is in relation to pupils, but it also concerns teachers. If teachers fail to understand the value and relevance of information skills to themselves as learners, will this create problems in developing those skills in their own pupils?

This paper focuses on interviews with (1) professionals who have expectations of student teachers regarding information skills, (2) student teachers reflecting on their own information skills. The data is set within the context of information skills development and the present teacher training ethos in Scotland. Results so far indicate three main issues: first, a lack of understanding about the term information skills; second, a general inability to view information skills as generic skills in a holistic way; and third, an inability and/or lack of opportunity, in many cases, to reflect on abilities and shortfalls.

BACKGROUND

Information literate individuals are "able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information. Ultimately information literate people are those who have learned how to learn." (American Library Association, 1989, p.1) To be able to identify, locate, analyze, evaluate and use information in an effective and efficient way is increasingly regarded as essential during every stage of life; in formal education (Heaney, 1986; Avann, 1985; California Media and Library Educators Association, 1994; Healey, 1992), in the workplace (Labour Market and Skills Trends: 1996/1997, 1996) and in relation to everyday decision making. Commitment to the development of such skills should come both from the learner and from those involved in educating others to become flexible learners, i.e., teachers.

Despite the fact that these skills are recognized as vital, there is still confusion surrounding their development. The Information Search Process based on Kuhlthau's research (1995) illustrates the need for learners to develop knowledge about the learning process and their own individual learning styles and strategies. Taking a holistic view of the information-saturated world might aid a true understanding of information skills and what they mean in our own learning experiences.

In the 1970s, the focus was largely on library skills which aided users to make more effective use of the library—using the catalogue, familiarization with library routines and so on. Although useful, they only dealt with the tip of the iceberg as far as effective use of information was concerned. The move away from library skills came with writers such as Winkworth (1977) who, in reviewing the literature on this subject drew up a list of skills in relation to the research process.

The need to be able to deal with ever growing amounts of information involves developing skills much broader than being able and confident to locate and access sources (Eisenberg & Brown, 1992). Cognitive skills need to be developed in all learners for the effective exploitation of information and it was within the education field that the need for these skills to be embedded in the learning experience was first highlighted.

By the 1980's the quantity of information available for consultation had grown immensely along with the broadening of the presentation media and formats, for example on-line information, CD-ROM, and increasingly in the 90s, the Internet.

The term 'information skills' was first used in the UK by Marland (1981) to cover the practical and cognitive skills associated with the effective use of information. Subsequent writers and researchers such as Hounsell and Martin (1983), Lincoln (1987), Howard (1991), and Irving (1992) have also used the term.

The term information skills, although not synonymous with information technology skills, does indicate overlap (Carter & Monaco, 1987). Many information sources are increasingly technology based (Greensfeld & Friedler, 1996). For example, the ability to search multimedia encyclopedias requires the ability to develop appropriate search strategies and it is clear from recent research that the use of information technology, with particular reference to teachers, is still causing problems (Wild, 1996; Times Educational Supplement (Scotland), 1994; Ridgway & Passey, 1996). Although much has been written about what information skills are and how they should best be taught (Rogers, 1994; Herring, 1996), little research has focused on the teachers who, it is assumed, will have information skills capabilities.

CURRENT SITUATION IN SCOTTISH SECONDARY SCHOOLS

The importance of developing information skills has been highlighted by many individuals and also many influencing bodies (Book Trust, 1991; Dubber, 1995). In Scotland, The Scottish Office Education and Industry Department (1991) have also provided guidelines to Scottish secondary schools. Increasingly, in the formal education structure there is a need for pupils to be able to handle increasingly more complex information in an effective manner. There have been a range of curriculum developments in the last ten years in Scotland whose emphasis has highlighted the need for pupils to develop information skills.

One example is, the 5-14 Curriculum Development Programme for pupils aged 5-14 years. This curriculum change affects both primary and the first two years of secondary education. There is general acceptance that these skills are both useful and necessary, and need to be developed from an early age. In accordance with this, 5-14 states that pupils need to develop skills related to 'planning, 'collecting evidence', 'recording and presenting' and 'interpreting and evaluating' (Scottish Office Education and Industry Department [SOEID], 1993). This trend is carried through Standard Grade examinations (16 year olds) and Revised Highers (17 year olds) (Scottish Examination Board, 1995). It will also be echoed in the aims of Higher Still, the latest curriculum development program for pupils aged 16+.

These curricular changes seek to move the emphasis from teacher led teaching to pupil oriented learning: there is more emphasis on teachers being facilitators and pupils taking more responsibility for their own learning. Pupils are required to carry out investigations about topics chosen by themselves. They are, in theory at least, encouraged to look to the wider information community for sources of information, not only the school library and departments.

In Scotland, the curriculum documentation alludes to the need to develop information skills in pupils. It also makes an unstated assumption that teachers will have these skills themselves and will effectively develop these skills in the pupils under their instruction (SOEID, 1993b; SOIED, 1993c; SOEID, 1996)

INFORMATION SKILLS TEACHING IN SCOTLAND

The 'traditional' approach to skills development, in Scotland at least, has been in the past to teach library skills to S1, and study skills to S5 and S6 pupils. The problems with this approach is that there is no reinforcement of skills between S1 and S5 either by the librarian in a structured way or by teachers. Also there is less opportunity to encourage transfer of skills between subjects—no recognition that what is learned in the library can be applied, for example, to use of resources in other departments. It must be emphasized that although there are examples of good practice in Scottish schools, that is, using a cross curricular approach to develop information skills in all pupils, many schools are still taking the traditional approach (Gill, 1994).

Problems with Information Skills Development.

Many problems have been recognized in relation to skills development. The following may arguably be amongst the hardest to overcome:

- integrating information skills into the curriculum from primary to S6 and teaching them in a cross curricular way so that all subject areas are involved. Beare and Slaughter (1994) state that knowledge in schools tends to be compartmentalized into subject areas with water tight boundaries. It may be difficult to penetrate these boundaries with cross curricular approaches to information skills.

- the teacher-librarian relationship. The professional services which school librarians can provide to the development of the curriculum versus the "...innate tensions in the divide between the professions of librarianship/information science and teaching" can be problematic (MacLean, 1993, p. 26). These tensions tend to manifest themselves when librarians become involved with the 'teaching' of information skills if teaching is seen to be the exclusive domain of teachers. MacLean, a former school librarian herself, advises that a partnership between librarian and teacher should benefit the school and that "It should not be seen as an erosion of the importance of teachers if the school librarian is recognized as having an essential part to play in the curriculum planning." (MacLean, p. 32)

- teachers' own information skills. Poor information skills amongst teachers has been recognized as a problem by researchers (Best, 1990; Squirrell, 1990) and practitioners alike. For example, Cotterill (1991), a school librarian who runs induction lessons for first year pupils, states "I make sure that the subject staff stay in the library when I am briefing pupils...They may be embarrassed or surprised when they cannot help individuals [pupils] who request it...." (p. 47) This quote indicates that teachers are, perhaps uncomfortably, made to realize that their own information skills are lacking. It also shows a general lack of transfer and/or lack of information skills development in their own education.

Hopkins (1987) made some interesting observations:

> [teachers]...tend to focus on materials to ensure that their students are 'busy'. They address goals literally but do not comprehend their underlying purpose...It is the acquisition of these principles [a critical appreciation of the curriculum] that is at the basis of information skills education, and they are not easily achieved by the bland use of workcard. (p. 89)

This begs the question 'how well equipped with information skills are teachers and to what extent will their own abilities and perceptions help or hinder the development of skills in their pupils?' If pupils are expected to develop search strategies, for example, then teachers' own information skills and attitudes will play a large part in developing skills such as identifying key words and using Boolean logic.

Teachers themselves need to be information literate (Hall, 1986) and need to be able to apply this information literacy to the principles of their curriculum. As stated by Olen (1994) teachers need to develop information skills in themselves first before they can develop them in their pupils. This is echoed in research by Best (1990) who states "If students leave college with memories of the library as forbidding and stressful...they cannot be expected to promote positive attitudes to library use amongst their pupils." (p. 15)

This theme of past experiences impacting on how teachers teach is also addressed by Britzman (1991) who says "The story of learning to teach begins actually much earlier than the time one first decides to become a teacher...They bring to their teacher education their educational biography." (p. 3) Any misconceptions about the importance and relevance of information skills picked up by future teachers during primary, secondary and higher education especially, may be fed back into the system. Conversely, it can be hypothesized that successful development of teachers' own information skills whilst they are learners, will result in more effective development of skills in their pupils.

THE STUDY

The study investigates issues surrounding the information skills of students training to be secondary school teachers.

Setting the Scene

In Scotland there are 2 routes to becoming a secondary school teacher. These are: Bachelor of Education [four year] and Post Graduate Certificate of Education [one year].

PGCE secondary school training is divided between college based and school based experience. The time in college is spent preparing student teachers for all aspects of teaching. In schools they are expected to develop teaching skills and become familiar with school routines and arrangements. Student teachers have a series of placements in secondary schools.

School librarians follow a general librarianship course; either a four-year Bachelor of Arts or a one-year Post Graduate course. There may not be a specific 'school librarian' element within the course but students can investigate issues pertaining to school librarianship by focusing project work and their dissertation. Figure 1 represents the broad context within which the present study is being undertaken.

The model, developed in 1995, is two dimensional: it represents the linear progression of student teachers from pupil to teacher and it also aims to illustrate the possible cyclical effect of information skills input, or the lack of it. This cyclical effect is interesting as teachers are the interface between their subject knowledge and the broader learning experience of their pupils. If teachers, as role models, are themselves uncomfortable using information, what impact could this have on pupils?

Methodology

The focus of this paper is a study within a study. It is part of a larger project which will, in its final phase, involve carrying out case study work in the classrooms of secondary school teachers to highlight issues relating to the application of their own information skills in the teaching situation. The following discussion highlights the results of the initial phase of the larger study in which semi-structured interviews with representatives of a number of key groups were set up in order to get a rounded picture of the perceptions and expectations of information skills development in student teachers. Interviews were held as follows:

- **Teacher Education Institute interviews**.

  10 lecturers from one TEI. In addition interviews were carried out with TEI librarians.
- **Secondary school interviews**.

  14 teachers from a variety of subject specialisms and six school librarians. In addition, three members of senior management were interviewed.
- **School Library Service**.

  Librarians at the local schools' library service based in Aberdeen.
- **Student teachers**.

  A small number of student teachers were interviewed while they were on their second school placement. In the following discussion each student teacher is identified by a code: ST1, ST2 and so on.

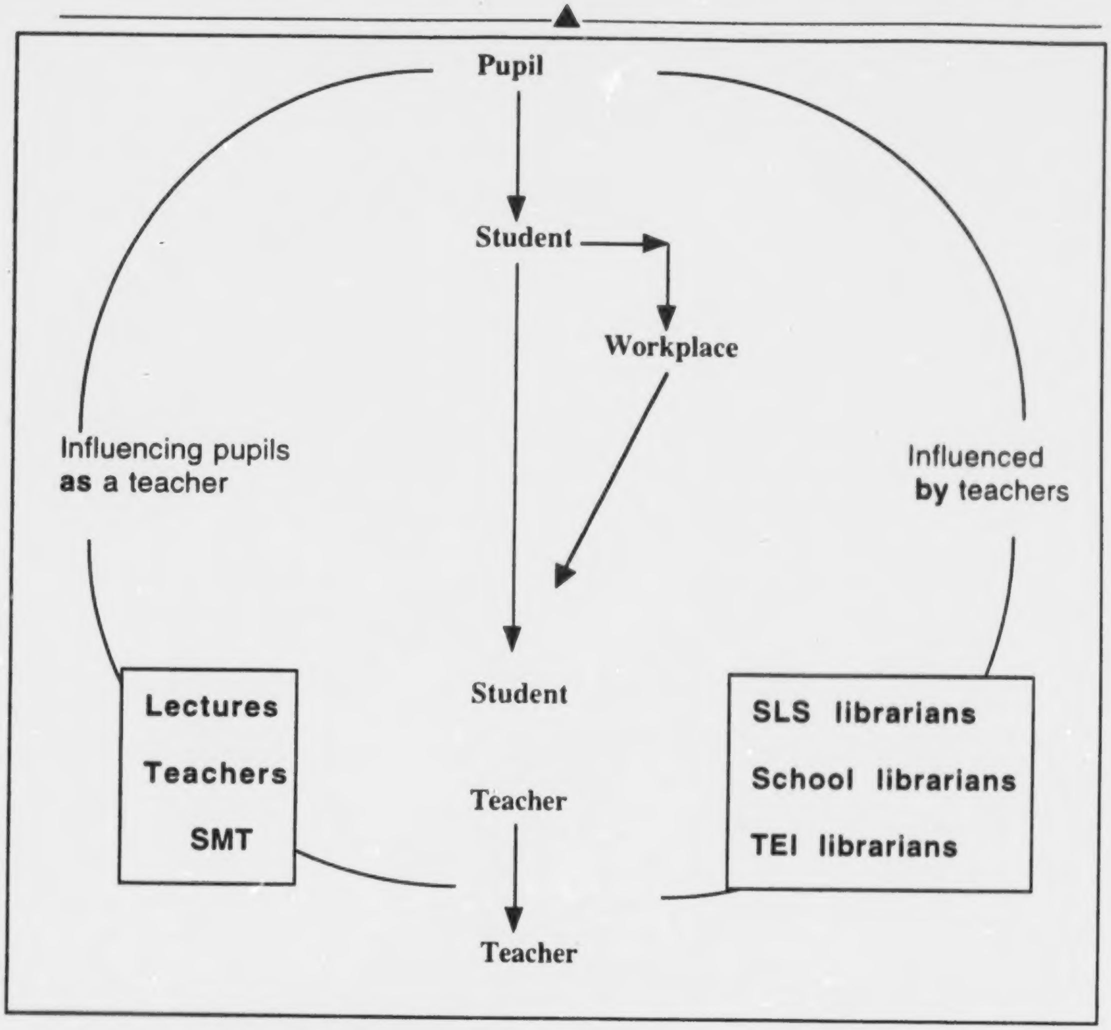
Pupil
Student
Workplace
Influencing pupils as a teacher
Influenced by teachers
Student
Teacher
Teacher
Lectures
Teachers
SMT
SLS librarians
School librarians
TEI librarians

Figure 1: Information Skills Cycle

According to TEI course documentation (Northern College, n.d. approx. 1994), the first teaching placement was seen as a time for students to become familiar with school routine and to watch teachers working in the classroom. During the second placement student teachers take on a more active teaching role; this seemed an ideal time to ask student teachers to reflect on their teaching and their information skills

FINDINGS

A number of issues were identified which tend to focus around 3 main themes: expectations and perceptions; information skills and; the course and teaching practice.

Expectations and perceptions.

This section makes reference to data gathered both from interviews and relevant documentation. Lecturing staff were asked to talk about their expectations of student teachers' information skills: several comments were made which reinforced the fact that their expectations of the student teachers' information skills capabilities were probably too high. One explanation was that because they were Post Graduate students they ought to have developed the skills during their first degree.

Teachers generally expected student teachers to gain a certain level of competence in teaching ability during their second teaching practice placement in schools but little consideration was given to any expectations of student teachers with regard to their ability in using information to continue their own learning. Thoughts about need for student teachers to be able to select appropriate resources for teaching purposes was varied; at best the criteria for selection which student teachers were expected to use were those connected with the level of the material, an awareness of sexism, racism and so on. Teachers themselves often commented that all the material they needed to teach classes was held within their own departments. This suggests that these teachers working with student teachers may have lower expectations about the need for student teachers to perform tasks laid out in the TEI curriculum guidelines, which state that student teachers should be able to "select and use in a considered way a wide variety of resources," (Northern College, n.d. approx. 1994, p. 4) and to "be aware of sources of help and expertise within the school and how they can be used [e.g.,] resources including the library..." (p. 6)

School librarians also thought that they should be able to expect students to use the library more effectively than they could. One said "Many have little or no knowledge of information skills. Little attention seems to be paid to the teaching of information skills in preparation for teaching practice." Another stated "We had an S1 science class down with a student teacher for their information skills lesson. The student teacher didn't know herself what the pupils were learning about."

Librarians at teacher education institutes all gave a very similar view of the students. They were seen as 'know it alls' who used the library much less often than PGCE (Primary) students. The librarians also indicated problems with lecturing staff namely, communication and problems of co-operation with regard to setting up, running and evaluating information skills programs with input from the library. This problem with lecturing staff is highlighted in the literature by Bines (1992) who recommended that lecturers and librarians should work closer together.

Student teachers generally felt that lecturers' expectations of them were high—sometimes unrealistically high. "They presumed that you knew these things. They didn't start anything over again...they did assume a lot about skills. They assumed that each mature student was expert in their subjects, which is totally ridiculous...." This feeling perhaps signals a lack of confidence in the student teachers as learners and information users.

The School Library Service librarians found that a number of the PGCE (Secondary) students came across as having a 'know it all' attitude. They also found that very few of the student teachers training to become secondary school teachers used the library service. The few who did use it generally came armed with a book list whereas the primary school student teachers research a subject. This perhaps said something about the teaching methods adopted by the TEI.

Information Skills

Lecturing staff agreed with Britzman (1991) that student teachers are influenced by their previous experiences in education. One said that students coming from particular institutions of higher education had poorer skills than others. This appears to back up Gill's findings (1994) that there may be poor transfer of skills from secondary school to higher education.

Another lecturer perceived little difference between the skills of those coming straight from school to do the BEd course and those of students coming from higher education. The respondent had expected that students coming from higher education would have more skills than those coming from school because they had more study experience.

There can be a number of possible explanations for this observation, including:(a) a transfer problem from both secondary school and first degree level; (b) skills taught in secondary education and at first degree level are inappropriate for post graduate study—perhaps indicating a general lack of communication between educational institutions; and (c) students at first degree level are either not expected to, or not able to, or not inclined to, develop skills in any more depth than those at secondary school.

One lecturer stated that students had difficulty focusing on information. The comment was made that they could not see the wood for the trees. This reveals a feeling that students' information skills are sometimes not well developed. They were seen to be unable to sift through the mass of information to find the relevant piece. Another lecturer said: "Students are often not restricted by lack of intelligence but by how well their information skills are developed." One TEI librarian could not recall meeting any of the students and the college had no input into their information skills. The library wanted to target the group but found it difficult to find a suitable mechanism to gain access to the group in order to find out their needs. Another TEI librarian was eager to make an input but found it hard to pitch it at a level acceptable to all the students. They felt that eventually they would have to move towards 'just giving a handout'.

There was a general impression that student teachers were not as well equipped with regard to information skills as they needed to be and there was concern about how the student teachers could teach information skills to pupils if they were poor at handling information themselves.

Selecting materials for the classroom is one way in which student teachers are required to use information skills. When asked about this, one teacher said that she selected materials for student teachers—"putting things in boxes"—the student selected from there. This teacher stated "There is no real need for them to practice selection in the classroom but they are probably given practice in the college." A Principal Teacher was quite embarrassed to admit that she even chose materials for her staff to teach with. The example she gave was of putting materials in a box for a supply teacher.

Most students found it difficult to take a holistic view of the information handling process and wanted to break any definition of information skills into component parts—finding information, evaluating information and so on. They seemed to be unaware of the links, not appreciating, for example, how evaluating the information seeking process would help the preparation for another information seeking task. It also seemed alien for them to see information skills as generic skills and each respondent could only really focus on how they might fit into their own subject. The problems associated with the compartmentalization of knowledge into subject areas is outlined by Britzman (1991); respondents also compartmentalized skills. This may reflect the training to be a secondary school teacher—the need to be within the boundaries of a subject. Interestingly, reference was made on several occasions to the positive factors associated with the primary school model of teaching where a more holistic approach to learning may be easier to achieve. ST6 said that in primary, pupils have a more holistic view of learning from his experience of them on placement. He said: "It's great to see, it really works, and then you come up here and suddenly everything has its own niche. The whole secondary structure is like that."

Student teachers had mixed experiences in Higher Education. Two of them related information skills to IT experience but were unable to elaborate about specific features of using CD-ROM for searching for information even when pressed. ST2 said that he had to use information skills because of the type of degree he did. He had studied with the Open University and said "I had to find out what libraries to go to for what information...I learned that by trial and error—by going to the wrong places first!" ST4's experience of information skills at university was that they were told to write essays. She remembered a library tour and being told "this is where you will find your stuff." This attitude of the librarian had obviously instilled in the student that there was a particular part of the library housing materials for her subject. This attitude would not help to create a cross curricular approach in school. She was not confident about approaching the librarian. ST5 said that he could remember no information skills teaching in HE and that their had been no input from the librarian. Both these students regarded the librarian as provider not facilitator. Their difficulties started when they had to search for material themselves. Neither of them could see this and relate it back to their own lack of information skills.

On the other hand, ST6 did make the connection between information skills and his ability to find information, albeit late in his education. He said that in third year after "fumbling" his way around the library they were given a course "...in information retrieval?...I can't remember...at the time that seemed almost flippant but in years to come I found that was absolutely invaluable."

Students were asked about the information skills element in their teacher training course. ST3 said that they were told to look out for certain things when selecting classroom material. They were told about good books for their subject and about avoiding "-isms" (racism and so on).

ST4 said that they were only taught about things like learning processes and talking about how pupils assimilate information—so nothing about how they, the student teachers, learn and nothing specifically about information skills. Students were then asked to comment on their information skills in relation to use of the library. ST2 said:

> when you go for the library lecture it's very much treated as a peripheral. Use it if you need it and if you don't think you need it well...That's the attitude of the whole course though. You're shown it because you may need it but it's not stressed that you will and should need it.

Student teachers were asked to discuss any problems they felt they had with regard to information skills. Apart from one respondent, they found it difficult to identify problems they had which were related to information skills. Broad examples of possible problems, for example, 'any problems when you are, say, in the library looking for information', had to be given to start them off. ST2 said that:

> to be truthful, if I was to go across to the library here [TEI library] [to use] the CD-ROM, someone would have to...show me how to use it...I can use a computer, the mouse and that but it is how the stuff works that I can't do.

ST2 was pressed further to explain his problem and it was clear that he was uncomfortable with search strategies and so on. It took a lot of effort for him to be able to articulate his problem as he obviously did not realize where the problem lay. This was part of a general difficulty student teachers appeared to have in trying to explain what they cannot do and are uncomfortable about.

ST2, when asked to comment on his own information skills (these were explained by showing Marland's (1981) list and talking around the idea of information skills) went through each skill individually:

> What should I make a record of? I haven't got a clue because no-one has ever said. I have made my own filing system, my own information base. If it is wrong then well, I still use it! Have I got the information I need? I don't know until I put it in for assessment.

This highlighted interesting issues; he assumed that there was one 'right' type of filing system not one to suited how he works; also he did not realize that 'Have I got the information I need?' is not something you have to wait until you get your assessment back to think about. He gave no thought to evaluating and reflecting on a task, no self assessment, even though it is expected that their pupils will do it.

> ST4 made a very interesting and perceptive point about the dilemma of being teacher and learner:When I am at college as a learner I'm allowed to make mistakes...if my information isn't there then it is my fault and I am getting marked down for it or if it isn't laid out well then I'm getting marked down for that. Here [at school] it has to be just so—or your kids are going to pick holes in it....

Students were asked to comment on teaching information skills to pupils. ST5 focused on practical skills and when pressed to talk about information skills said: "I'd say look I've got a book here, or, ask them 'How would you find out about this?' and then if they have any ideas, like going to the library, which would be obvious, then they'd go off and do it." So little follow through here...the librarian's problem now!

In general, students had problems expressing their own information skills experiences. They seemed more comfortable talking from the classroom perspective and what they would expect of the pupils.

The Course and Teaching Practice Experience

Lecturers were quite clear that student teachers were influenced by the departments to which they were attached and that "students often feel restricted on placement." A student was told that she could not use a particular teaching method because "...it's always been done this way here." However, one student felt she had been influenced positively by a school she had taught in. It was trying to develop a cross-curricular information skills approach. She saw benefits to pupils and said that once qualified she would try to do likewise. She, however, was aware that this might be problematic if the school was less innovative.

Students were asked about their induction to the schools. These appeared to vary from a "whistle stop" tour, to a course involving a day shadowing a pupil, time spent on the school ethos and structure and a general information booklet.

When discussing information skills development of pupils many TEI lecturers made little reference to the school library unless prompted to do so. The general consensus of school librarians and lecturers about use of the school library by student teachers was that it would depend on the department to which she/he was attached. ST2 said that he thought that co-operation between librarian and teachers was important and that teachers needed to be more flexible. However when it came to the crunch he said: "Well, but contrary to my first statement about co-operation—I think it [resources] should be in the department." When asked why, he said, "[the] resources are at my hand. I can say: On this shelf there are books on graphics. Look...on page whatever. That to me is positive encouragement to a kid." But not exactly developing information skills in his pupils!

An indicator of the importance of highlighting information skills to students was revealed by ST3, who said that he had "not been taken into their [the department] confidence enough to know what was in their development plan" so he did not know if information skills were in the development plan or not. This shows a lack of getting the student involved and means that he is simply spoon-fed what the teacher considers he should have. He is not allowed to interpret the ethos of the department by seeing the documentation that goes along with it. This was a fairly light hearted comment but with important issues underlying it.

Students were unaware of any committees in their placement schools dealing with or related to information skills. One guessed that each department was on its own but that it would vary from school to school and would depend on the teachers. ST5 said he was surprised at how many children used the library. When asked if he encouraged his pupils to use the library he said that he would like his pupils to use the library but said: "we've got other things to do in class. So I'd rather they didn't do it in class time." ST1 was questioned about the information skills of pupils under her supervision. She said that pupils had to use the telephone directory and she was amazed that they did this poorly. She asked if that was an information skill—she was very unclear about what information skills were and their application to everyday tasks.

ST4, saw problems of transfer of skills of her pupils when an example was cited. She asked her class to do a simple comprehension but they got stuck. She thought that this was because they felt the task was out of context, i.e., she was not an English teacher. She was asked if she felt confident about teaching these skills and she laughed and admitted that she was teaching things that she could not do herself. She was poor at lesson planning she said and also about knowing the difference between aims and objectives. She said:

> I think...the idea of putting things into your own words, taking notes and helping the information:to sink in because you've had to rephrase it is something that I'm not very good at, but because I'm not very good, I see the importance of getting them to do it.

These findings have concentrated on three themes emanating from the interviews. These themes suggest indicators of positive and negative influences on information skills development within the student teachers professional framework, and a discrepancy between the skills required to underpin the ethos of the formal curriculum and the students' broad appreciation of the nature of these skills and their application in the curriculum.

CONCLUSIONS

> If it [a curriculum] cannot change, move, perturb, inform teachers, it will have no effect on those whom they teach. If it has any effect on pupils, it will have it by virtue of having had an effect on teachers." (Bruner, 1977, p. xv)

Results indicate three issues: first, a lack of understanding about the term information skills; second, a general inability to view information skills as generic skills in a holistic way; and third, an inability and/or lack of opportunity, in many cases, to reflect on abilities and shortfalls. Each group of respondents saw lack of information skills in others but were mostly unable to focus on their own. This third issue gives most concern as the first two issues might be lessened if the third issue was tackled.

These people do not need a crash course in librarianship. They need to be information literate. The study, however, suggests that the issue is bigger than this: before they know how to become information literate, they first need to appreciate why they need to become information literate. They must develop the ability to verbalize their needs and for this to happen they need time to reflect on what learning means to them in order for these needs to be clarified. Being taught about the learning process in connection with your job as a teacher is quite different from internalizing the information and applying it in a personal way.

So where is the time for this reflection? The study so far indicates that it does not exist. Although the appropriate skills are recognized within curriculum guidelines, no time is apparently dedicated for ownership and review of these information skills. Teacher educators have the ideal opportunity to help student teachers gain competence and confidence in information skills because of the emphases in the curricula, both at school and TEI. The curriculum policy documentation and the approach of the course content need to mirror each other. TEI educators are still teaching learners—subject expertise alone does not make them teachers or effective learners. As Brake (1980) said: "Initial teacher and librarian education must propagate the idea that education, particularly for professionals, is a continuing process." (p. 40)

Reflection is part of learning and teachers, more than other learners, are, by virtue of their profession, involved in the learning process—for themselves and for their pupils. Teachers need opportunities in a supportive environment to develop their own information skills; they also need to recognize themselves as a strange amalgam of teacher and learner. "Gatekeepers to knowledge" is one view of teachers but in the era of independent learning this image does not sit comfortably. Looking to the future Beare and Slaughter (1994) say:

> [T]he knowledge structures which come...in the form of stereotyped subjects and disciplines (and schools are full of them!) can work against the development of optimism and empowerment...they confront the learner with pre-givens requiring accommodation and acceptance, not reconceptualisation and creativity. (p. 127)

This view of formal school learning is also addressed by Vaill (1996) who suggests that it is a control system which does not prepare us for the "messy learning world" we live in. He suggests a need to "rethink the kind of learning, in content, form and underlying philosophy." (p. xvi) This paper would agree that if information literate teachers and information literate pupils is the desired outcome, then some of the structures within which they learn need to reflect more upon the "messy learning world" within which we undoubtedly exist and reassess their direction and approach.

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INTEGRATING INFORMATION TECHNOLOGY INTO AND ACROSS THE CURRICULUM: A SHORT COURSE FOR SECONDARY STUDENTS

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ABSTRACT

The installation of technology in the school library is only the first step in its effective use by students. Many search engines are not intuitively obvious to users, and although students love computers, they often need help with searching. The author combines the results of action research in the high school library with conclusions in the professional literature to argue that systematic formal instruction in electronic search skills is necessary for awareness of library software and competence in its use. The paper focuses on the why, what, when, where, and how of teaching electronic search skills to high school students.

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The installation of information technology—hardware and software—is only the first step in providing the full range of its educational benefits for students. In order for students to realize the full potential of information technology, they must become efficient and effective users of that technology. The central question for school librarians is what type of bibliographic instruction is most likely to achieve that goal for students.

Educators, administrators, and parents want to know the educational benefits of any program for students, and this is as true for information technology as for other educational programs and expenses (Scheib, 1993). Information technology is expensive, and it competes with other programs with increasing costs. Therefore, it should be therefore justified in terms of its real educational benefits for students. If an investment in information technology does not yield improved student learning, the question may well be asked if that technology is worth the money.

The cost of providing education is increasing exponentially, and there is evidence that the public may not provide an ever increasing amount of funding. There may be a backlash from administrators, parents, and taxpayers if improved learning does not result from additional expenditures. While expenses may increase across the curriculum, funding cuts may be focused on a few departments which seem less essential. Indeed, retrenchment in spending on schools and school libraries has already occurred in the United States (NJ Gov., 1995; Olson, 1995; Sadowski, 1993). In California, Proposition 13 led to decreased funding for schools, which led to decreased funding for school libraries and library media specialists. The ultimate result of Proposition 13 has been a reduction in student literacy and information skills at both the high school and college levels (Gorman, 1995).

WHY TEACH ELECTRONIC SEARCH SKILLS?

Information Technology Supports the Mission of the School

In order to achieve goals and justify funding for hardware and software, school librarians should be prepared to make clear the multiple connections between student proficiency in information technology, increased student learning and use of resources, and educational missions (Scheib, 1993). Although each district and school may have its own mission, there are several common underlying themes such as delivering the curriculum, the development of cognitive abilities, the quality of student-teacher relationships, and the instillation of democratic values. Each of these can be strengthened by a school library program which utilizes information technology.

Deliver the curriculum.

Information technology helps deliver the academic curriculum in a number of ways. Electronic indexes facilitate resource-based learning across the curriculum by improving student access to and use of existing print and electronic materials in the library. Information technologies such as union catalogs, electronic libraries, and the Internet enhance the collection which supports resource-based learning by providing access to remote traditional and electronic materials.

Computer literacy is an integral part of the curriculum in most schools; incorporating information technology can strengthen students' computer skills. Most students learn word processing in computer literacy classes, but they may know little about databases. Databases are an efficient means of storing and retrieving information, and they are used for such typical library resources as indexes, online catalogs, and full-text materials. Through instruction in information technology, students can increase their computer literacy by learning the structure and operation of databases, additional software, networks, and the Internet.

Information literacy is also part of the curriculum, and the efficient and effective use of new information technologies is an essential component of students' competency as lifelong learners and users of information. Both the increasing amount of accessible information and the widespread public availability of electronic resources call upon our students to develop even more information skills and become even more sophisticated in their choice of resources and their use of information. Electronic searching can be incorporated with traditional information skills into Eisenberg and Berkowitz's Big Six Skills (Eisenberg & Berkowitz, 1988). For example, in the second skill, students should become knowledgeable of the variety of electronic as well as traditional resources found in the library, and they should know which of these resources are appropriate for their information need. In the third skill, they should become competent in developing, evaluating, and modifying a variety of electronic search strategies and statements in order to retrieve needed information from all types of materials. Moreover, in using resources on the Internet, students should be prepared to evaluate the authority of the source—something they could take for granted in library collections.

Develop students' cognitive skills.

In addition to expanding their knowledge of and access to available information resources, students who use electronic access tools practice a variety of thinking skills across Bloom's taxonomy (Bloom, 1956; Bodi, 1990). Knowledge and comprehension of the variety of traditional and electronic resources form the foundation of information literacy and are utilized in selecting appropriate materials for an information need. Analysis is used in topic definition and the generation of related, broader, and narrower search terms. Logical thinking skills are used in the selection of appropriate search strategies and in the development and modification of search statements using subject headings and Boolean operators. Information skills are applied in resource-based learning across the curriculum. Students learn to identify and assess citations in order to evaluate the results of their searches and select resources for their use. Evaluation of resources and information becomes even more important when the number of available resources is increased and especially when using the Internet. In preparing a written or oral report, students synthesize the information retrieved in a meaningful way related to their topic or hypothesis.

Improve student-librarian relationships.

The use of electronic access tools increases and enhances the contact between school librarians and students as they discuss appropriate resources, search strategies, and search statements for a particular information need. The school librarian performs as a competent, informed, and intelligent manager of information in a variety of print and electronic media. The school librarian who teaches a course in electronic search skills increases professional and personal contact with students.

Strengthen democratic values.

The appropriate use of information technology is predicated on democratic values which should be made explicit. The ethical use of information in terms of copyright and plagiarism is an even greater challenge when information technology provides students with the capability to copy, download, and print from full-text resources. Students should be aware of the temptations made possible by technology and their responsibility to abide by academic honesty and to respect fair use of copyrighted materials. Expensive hardware and software in the library are community resources which students should respect and share maturely. They should also respect and evaluate the authority and opinions of others found in the expanding universe of resources and information.

Information Technology Supports School Library Missions

Information technology supports several goals of the school library in addition to those of the school.

Provide efficient access to the collection.

Competent searching of electronic indexes, catalogs, and full-text resources provides improved physical and intellectual access to both traditional and electronic materials in the school library. Electronic indexes are quicker and more thorough than print indexes for sifting through materials printed over an extended period of time. While print indexes are efficient for one book or for one year of periodical publications, electronic periodical indexes enable the student to use one search to retrieve articles published over a number of years. They also enable keyword searching of abstracts or full-text resources.

Increase utilization of the existing print collection.

Electronic indexes and catalogs foster increased use of existing print materials. Most students would rather use an electronic than a printed periodical index, and in my library I have found increased use of hard copies of periodicals and articles since the installation of electronic indexes for these resources.

Promote and facilitate resource-sharing among libraries.

In resource-based learning, students may be encouraged to develop their own research interests, and most school libraries could not afford to provide the breadth and depth of collection needed to support them. State and regional union catalogs which are available in the school library on CD-ROMs or hard drives enable students to search for and obtain remote materials on topics of individual interest. For Example, the installation of the Pennsylvania online union catalog, ACCESS-PA, on our Library Information Network made available to our students more than three million titles in 1300 special, public, academic, and school libraries across the state. The program also generates an interlibrary loan request form. While Shady Side Academy has been a net lender of materials to other libraries, Senior School students have received more than 450 books from other participating libraries. This means that our students have used resources currently worth about US $11,250 from the collections of other libraries in the consortium.

Improve student lifelong learning and information skills.

The philosophy of reference service in special libraries is usually to bring a resource to the user—to bring a fish. The philosophy of school and academic libraries, on the other hand, is to teach students to be independent users of information—to teach them to fish. Public libraries fall somewhere in between (Harris, 1992). School librarians have successfully taught students to use the card catalog (Coupe, 1993). Now, we should teach them to use electronic resources effectively. At the very least we should devise instructional programs which will enable our students to utilize the multitude of traditional and electronic resources now available. Our students have access to the Internet and to a variety of OPACs and CD-ROMs in school and public libraries. They will find even more electronic resources in college and university libraries and campus networks. Information technology and electronic resources should, however, be kept in perspective. The use of print materials and access tools is still very important (Boardman, 1996).

Competent student use of information technology clearly supports school and school library missions and goals thereby justifies the large investment it requires. The question remains, however, whether students can learn to use information technology effectively by themselves or whether systematic instruction in that technology is necessary for them to utilize a wide range of cognitive skills and become efficient and effective users of the hardware and software. To answer this question it would be helpful to examine current progress toward the goal of preparing students to become competent users of information technology.

There is at present little uniformity among the multitude of search engines for information software. The standardized professionally developed card catalog, which enabled patrons to walk into any library and use its major access tool, has been replaced by a multitude of commercially developed OPACs whose uniqueness is reflected in their individual and often creative names. This situation is compounded by the variety of search engines for the indexes and full-text resources found on CD-ROMs and the Internet. The use of this software, however, is not intuitively obvious to students or even to information professionals (Chen, 1993; Edmonds, Moore, & Balcom, 1990; Hooten, 1989; Kenny & Schroeder, 1992; Sandlian, 1995; Solomon, 1994). These electronic tools and resources do require new skills and have revived an interest in group bibliographic instruction to meet the needs of library users by at least enabling them to use the resources at hand (Allen, 1990; Bush & Wells, 1990; Coupe, 1993; Dennis & Stadthaus, 1991; Edmonds, Moore, & Balcom, 1990; Fox & Weston, 1993; Johnson et al., 1993; Kenny & Schroeder, 1992; Kosuda, 1986; Manczuk & Pasco, 1994; Martin, 1995; Miller & Warmkessel, 1990; Nash & Wilson, 1991; Nickerson, 1991; Wright & Friend, 1991).

The professional literature indicates that librarians have not yet been successful in preparing students of all ages to use the information technology now available in libraries. Children in elementary, middle, and high school do not use effectively either the standard or specially designed juvenile OPACs found in school and public libraries (Chen, 1993; Edmonds, Moore, & Balcom, 1990; Hooten, 1989; Sandlian, 1995; Solomon, 1994). Types of errors found when high school students use an OPAC include spelling and typing mistakes; conceptual and interpretive errors; and lack of knowledge of the library, the subject, and the online system (Chen, 1993). A survey at the Johns Hopkins University indicated that while college students are quite knowledgeable of the catalog card and the card catalog, they had difficulty using online catalogs and indexes (Coupe, 1993). Not all college students like to use OPACs and databases, and even those students who do are usually unaware of their own ignorance in using them (Kenny & Schroeder, 1992; Nash & Wilson, 1991; Warmkessel & Carothers, 1993). A number of studies have concluded that college students cannot effectively use OPACs and cannot interpret the citations they retrieve (Bush & Wells, 1990; Coupe, 1993; Fister, 1992; Greer, Weston, & Alm, 1991; Kenny & Schroeder, 1992; Martin, 1995; Nash & Wilson, 1991; Scott, Trimble & Fallon, 1995). Moreover, many college students think they are better searchers than they really are, they do not ask for help in using electronic resources, and they do not learn to use the OPAC or indexes by themselves over repeated time in the library (Allen, 1990; Coupe, 1993; Fox & Weston, 1993; Kenny & Schroeder, 1992).

This situation calls for attention from librarians from kindergarten to college since an information literate public depends on librarians at all levels (Gorman, 1995; Kemp, Nofsinger & Spitzer, 1986). School librarians have an important role to play in enabling students of all ages to use information technology because one of our missions is to provide the resources and learning activities which will enable students to become lifelong learners and users of information (American Association of School Librarians & Association for Educational Communications and Technology [AASL & AECT], 1988). To achieve this goal school librarians should not only install information technology but also develop an information skills program which will enable students to use effectively the electronic resources both in the school library and in the world beyond.

I decided to develop such a program at the Shady Side Academy Senior School after installing a local area network in the library. In order to present a relevant and developmentally appropriate information skills program for my students, I needed to determine the existing level of information skills among students who were ready to graduate. I therefore initiated an annual survey of library use and electronic information skills among seniors. Since there had been no prior systematic instruction in electronic information skills, this survey would indicate what the students were able to learn on their own and by inference as well as what I would have to teach in order to bring them to the desired exit-level of skills.

The results of three years of these surveys of information skills indicated that senior students did not find or learn to use electronic resources on their own during two years of their availability on the library network. The two least used electronic resources on the network were highly relevant to their resource-based learning in health, history, and English composition. This finding underscores the significant role that the school librarian plays in exposing students to available materials, even electronic resources (Howe, 1997).

Secondly, the surveys indicated that more students actually used electronic resources than claimed to know how to use electronic search skills. Specifically, more students actually used Boolean searches than claimed to know how to use them and more students claimed they knew the difference between subject and keyword searches than actually used a keyword search (Howe, 1997). This finding supports the need for instruction in basic search strategies and statements.

The results of my action research at Shady Side Academy are similar to the conclusions of public and academic librarians that students cannot effectively use electronic information skills without instruction, that self-assessment exceeds performance, and that students do not learn electronic information skills on their own (Coupe, 1993; Fox & Weston, 1993; Greer, Weston, & Alm, 1991; Kenny & Schroeder, 1992; Nash & Wilson, 1991; Sandlian, 1995). The professional literature and my action research also support the more general conclusions that the knowledge and skills needed to solve problems with technology are quite different from those of a paper environment, that students do not automatically apply critical thinking skills to their use of electronic access tools, and that systematic instruction is necessary to ensure that all students become effective and independent users of information and libraries (Allen, 1990; Bush & Wells, 1990; Coupe, 1993; Dennis & Stadthaus, 1991; Fox & Weston, 1993; Harris, 1992; Johnson et al., 1993; Kenny & Schroeder, 1992; Manczuk & Pasco, 1994).

In addition, informal observation of my students over the past four years leads me to believe that the popular consensus that students love and instinctively know how to use computers is not necessarily true in secondary school libraries. Some students prefer the card catalog and enter high school with poor keyboarding and spelling skills—two skills which are necessary for successful use of an OPAC (Sandlian, 1995). The crowds of students who arrived in the library after installation of the network were generally more interested in hacking than in searching for information. Students who love computer games and programming are not necessarily good at electronic searching; different interests and skills are involved.

In light of this evidence, it is hard to deny that systematic instruction in electronic search skills is necessary to ensure that students have the skills to manage information efficiently and effectively in both traditional and electronic formats and to meet the goals of an information literacy program which supports school and library missions. Professional guidelines exhort us to provide "systematic learning activities" (AASL & AECT, 1) and the evidence suggests that this is needed in the form of course instruction.

WHAT TO TEACH ABOUT ELECTRONIC SEARCH SKILLS

Which skills in information technology should be taught flows from the specific context of the school—the students, the goals of the information literacy program, the available resources, and the available time in the schedule as well as the missions of the school and the library program. What is taught should prepare students to use resources they will find within and beyond the school setting and should be incorporated into the district K-12 scope and sequence of information skills.

Within a specific school, an information skills program should be developmentally and curricularly appropriate. School librarians planning an information technology program should take into consideration the entry-level skills of incoming students, the range of students' physical and cognitive abilities, students' interests, the school curriculum, applications in resource-based learning, and the desired exit-level skills for students. Minimal skills for the use of information technology include keyboarding, spelling, the interpretation of citations; and knowledge of access points, the classification system, and information resources (Chen, 1993). Instruction should be designed to move students from entry-level to the desired exit-level of information skills.

In order for students to develop lifelong learning skills, high school librarians should prepare them to use not only the resources in their own school library but also those they are likely to encounter in public and academic libraries since comprehensive instruction is not consistently available in those libraries (Harris, 1992). There is evidence that information skills learned in high school do carry over into college (Coupe, 1993; Kosuda, 1986). Although Kester (1994) found that few information skills were transferred from high school to college, the results of this study may reflect the particular types of survey questions, students, and high school information skills programs under consideration.

Retention and transferability of information skills may be more likely when those skills are presented systematically within the context of general concepts which can apply to other library situations and in a separate course rather than either course-integrated or point-of-use instruction (Fox & Weston, 1993). Chen's (1993) finding of many errors of basic library concepts among high school students using an OPAC indicates that information concepts should be taught and that instruction in the mechanics of operation is not sufficient for information literacy. Instruction and comprehension of basic information concepts, and not just point-of-use applications, may be necessary for students to become lifelong learners and users of information (Jacobson & Jacobson, 1993).

Instruction in concepts is feasible for most high school students since most adolescents are in Piaget's formal operations or abstract level of cognitive development (Elkind, 1994; Jacobson & Jacobson, 1993; Woolfolk & McCune-Nicolich, 1984). Information concepts which can be presented and applied in a course in information technology include database structure, network structure, the functions and access points of indexes, the research process, the search process, types of search strategies, Boolean operators, the classification system, and the ethical use of information (Jacobson & Jacobson, 1993). Each of these concepts lays a foundation for lifelong learning and information literacy and each should be made concrete through a practical demonstration or application at the time of instruction (Jacobson & Jacobson, 1993).

Academic librarians have enumerated the information skills needed by college students: awareness of library resources and services; knowledge of access points for card and online catalogs; and the abilities to select and focus a topic, to identify and use correctly search strategies and statements, to distinguish types of indexes and citations, and to locate and evaluate materials (Allen, 1990; Bush & Wells, 1990; Coupe, 1993; Fox & Weston, 1993; George, 1988; Greer, Weston, & Alm, 1991; Kenny & Schroeder, 1992; Kester, 1994; Nash & Wilson, 1991). Since these skills are also needed to function in public libraries at the adult level, high school librarians would be wise to consider them as a list of desirable exit-level skills and incorporate as many as possible into their information skills programs.

Resources to be used in instruction in information technology should be available in the school library and include as many as possible of the basic genre: catalogs, indexes, full-text resources, search engines on the Internet, and specific relevant authoritative and valuable information resources available on the Internet. Consider at the time of purchase how suitable each program is for instruction. Are both the content and the search engines developmentally appropriate for your students? Do menus, nomenclature for search strategies, and features exemplify the concepts you want to teach? Can the content of the software be used in skills instruction and related to other courses in the curriculum?

WHEN TO TEACH ELECTRONIC SEARCH SKILLS

In secondary schools it is advisable to teach the correct use of a resource when it is first available for use. Students may develop incorrect assumptions and bad habits when use precedes instruction, and, as noted above, the professional literature suggests that students do not learn to use information technology on their own, even with repeated exposure. Information technology should be taught the first year a student arrives in a secondary school so that students are aware of and can use those resources throughout their years in the school.

The other major question of when to teach information technology concerns point-of-use instruction versus instruction in a separate course. This is part of the larger discussion of whether the goal of bibliographic instruction is specific applications or lifelong use of information. The concepts needed for lifelong learning strategies are not usually addressed in point-of-use instruction which necessarily focuses on specific resources. The ideal bibliographic instruction program at the college level includes group instruction, printed guides or computer aided instruction, and one-on-one reference service (Greer, Weston, & Alm, 1991); Johnson et al., 1993). This may be a good model for high schools as well.

While colleges and universities have developed a variety of means of offering bibliographic instruction in information technology, separate courses do exist and are successful at the college level (Bush & Wells, 1990; Dennis & Stadthaus, 1991; Fox & Weston, 1993; Johnson et al., 1993; Kosuda, 1986; Martin, 1995; Miller & Warmkessel, 1990; Nickerson, 1990; Wright & Friend, 1990). A separate course offers advantages over point-of-use instruction, and college students do enroll in a separate elective course in information literacy in order to apply the knowledge gained from that course to assignments in other courses (Dennis & Stadthaus, 1991; Kosuda, 1986).

A separate course in basic information literacy is suitable and recommended at the secondary level for a number of reasons. First, separate instruction is developmentally appropriate for young adults. Adolescents are moving into the abstract level of cognition and also have increased capacity for both short-term and long-term memory compared to younger children (Elkind, 1994). Second, all students need these skills, not just those in courses whose teachers bring them to the library for resource-based learning. Third, even those teachers who bring their classes to the library for instruction do not have sufficient time to allow the school librarian systematically to teach concepts or electronic search skills as an integrated information skill during their class period. Fourth, there is evidence that high school students can apply concepts learned in instruction to applications at other times (Chen, 1993; Smeltzer, 1996). Finally, if something is worth knowing and learning, it is worth teaching systematically with an orderly progression of concepts and skills. This is the foundation of teaching and learning in other courses. Most librarians would admit that their electronic search skills improved after a course in online searching.

Point-of-use instruction also has an important role in the secondary school. Individual or group instruction in the use of additional course-specific electronic resources could be integrated into those courses which use them for resource-based learning. In this way information technology skills may be integrated and utilized across the curriculum even though basic concepts and skills are taught in a separate course. Personal assistance to the individual researcher is also very effective.

HOW TO TEACH ELECTRONIC SEARCH SKILLS

Recommendations for how to teach information technology flow from what and when to teach. Obviously, such instruction should be developmentally appropriate in methods, timing, and resources. The following recommendations for a course at the high school level are derived from my own experience teaching a mini-course in electronic search skills three times a year for three years and are supported by the professional literature as noted.

Such a course should be a carefully planned orderly progression of topics, concepts, and skills. There should be presentation in concepts and timely practice of those concepts at the keyboard (Ala & Cerabona, 1992; Jacobson & Jacobson, 1993; Kosuda, 1986). Individual learning is preferred to cooperative groups so that each student may have his or her own choice of topic to research and may experience reinforcement of concepts and skills through repeated practice and exposure to multiple search engines. Moreover, when there are not sufficient workstations for each student to have his or her own, those students without a keyboard often begin to lose interest. Individuals can work well together, however, on generating search terms and search statements (Jacobson & Jacobson, 1993; Warmkessel & Carothers, 1993).

Allow students their choice of topic to research since they will be searching for, locating, and reading a number of resources. When students select the subject of their research, the process and product may be of greater interest and they may see more applications (Dennis & Stadthaus, 1991; Johnson et al., 1993). It may also be possible to integrate the results of the student's searching on a topic of choice into another classroom course. The information from articles and books retrieved and read can be put in an annotated bibliography or research report and turned in to the teacher of a relevant course after grading by the school librarian. In this way information technology presented in a separate course may be integrated across the curriculum.

In designing instruction for a separate course, ensure that students utilize the range of thinking skills in Bloom's taxonomy: knowledge, comprehension, application, analysis, synthesis, and evaluation (Bloom, 1956). When students are gaining knowledge and comprehension and using higher order thinking skills, the course is more likely to contribute to learning and to school and library missions.

In even a brief course students can gain new knowledge of resources and access tools, basic concepts of information access and electronic searching, specific search engines, methods to evaluate the results of searches, organization of the library, and citation format. Students may also gain knowledge of subject matter when the results of their searches are used to create an annotated bibliography or a research report.

Student comprehension of concepts and skills can be assessed through observation at the keyboard, printouts from searches, worksheets, practicum questions, written or oral reviews and tests, and bibliographies (Feinberg & King, 1992).

Concepts, search strategies and statements, and methods of evaluating searches and citations should each be applied at the keyboard with various electronic resources. Students apply their knowledge of resources when they select an appropriate database to search. They apply their knowledge of search strategies and statements to the type of information resource they want. They apply evaluation techniques in modifying searches and in selecting materials to use. They apply their knowledge of library organization as they locate library resources retrieved on their searches. They apply their knowledge of citation format to distinguishing books from articles and to the creation of a bibliography of resources found with electronic searching.

Students use analytical thinking skills when they define a topic and generate related, broader, and narrower search terms. They analyze the type of information and resources needed in order to select appropriate access tools and materials. In writing an annotated bibliography, they analyze resources. Students who write a research report synthesize the information found in all resources into a meaningful and well organized text.

Evaluation is an especially important skill when using information technology. Students should learn and apply the two basic methods of evaluating the results of searches so that they can modify strategies and statements in order to improve the yield. Students should be able to evaluate citations in order to select those best suited to their topic. Students with access to the Internet should be aware of the importance of evaluating the authority of the source of the information they have retrieved. Ultimately students learn to evaluate resources and information for their accuracy, authority, and bias, although this may be more common in college than in high school (Bodi, 1990).

Lesson plans may be based on Madeline Hunter's design for effective teaching: statement of purpose, modeling by the instructor, student practice guided by the instructor, and finally independent practice by the student (Henson, 1993; Jacobson & Jacobson, 1993). The computer screen used for modeling may be projected by means of a liquid crystal display.

WHERE TO TEACH ELECTRONIC SEARCH SKILLS

Teaching a basic course in electronic search skills requires a local area network of contiguous workstations so that the resources are simultaneously available for students during instruction. The network should have a workstation for each student, but if this is not possible two students may share one. The workstations should be in a quiet location removed from other students using the library since teaching, student interaction, and printing generate noise. A small computer lab in a separate room in the library is ideal. If this is not available and the school network includes library resources, you might arrange to teach electronic search skills in the computer lab or writing center. You may want to present concepts in a classroom where you can use an overhead projector or chalk board and students have room to take notes.

A basic course in electronic search skills could be included in the curriculum in either a library skills or information literacy course, a computer literacy course, or a research skills course. Including electronic search skills in a computer literacy or research skills course provides a model of interdepartmental, interdisciplinary cooperation and offers another means of integrating information skills across the curriculum.

CONCLUSIONS

Systematic instruction of electronic search skills in a separate course clearly supports school and library missions. Such instruction is necessary to justify the investment in information technology because the evidence suggests that students do not learn to be efficient users of that technology on their own. Concepts, skills, and resources used in instruction should be developmentally appropriate, and students should choose their own topics and utilize the range of thinking skills in Bloom's taxonomy. Information technology may be integrated into the curriculum through a short course for all students offered as part of library skills, computer literacy, or research skills. Such a course may be integrated across the curriculum by allowing students to research a topic for another course and by providing students with the concepts, skills, and resources they can use for assignments in other courses throughout their school years. In order to serve the needs of students and the curriculum and to meet the missions of school and library programs, a comprehensive high school bibliographic instruction program should begin with a separate course for all students and continue with course-integrated instruction in specific resources, printed materials, and personal one-on-one or assistance. In this way, school librarians will best prepare students to be lifelong learners and users of information.

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AN INTERDISCIPLINARY MODEL FOR ASSESSING LEARNING

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ABSTRACT

During the 1994-95 school year the Kansas Association of School Librarians Research Committee conducted a literature review and held a two-day summer institute to develop an interdisciplinary model for assessing learning across the curriculum. Participating were teachers, administrators, library media specialists, and Kansas State Board of Education curriculum specialists. During the 1995-96 school year the committee presented the model to teachers and library media specialists at professional meetings and workshops for reactions. The model has been revised and is being tested in Kansas schools during the 1996-97 school year.

The model is based on the "Big Six" model for information problem-solving by Eisenberg and Berkowitz (1990) and is derived from an analysis of Kansas content standards for language arts, social studies, mathematics, science, reading, and library media. The model divides student assignments in these six subject areas into five parts, using terminology from the standards for each subject. Rubrics have been developed for each of the five parts of an assignment. This paper will recount development of the model, delineate elements of the model, reveal preliminary findings of the current research project which tests the model, and discuss implications for implementing the model.

THE PROBLEM

In 1991 the Kansas State Department of Education began a statewide school improvement process when it adopted the Quality Performance Accreditation system. Unlike past accreditation methods which focused on such things as the number of books in libraries or the square footage of buildings, Quality Performance Accreditation accredits schools based on student performance, i.e., a school's quality is judged by its students' academic performance and their continual academic improvement. Furthermore, the Quality Performance Accreditation system requires all educators to be collaborative in the design, implementation, and assessment of instruction.

Since 1993 the Kansas State Department of Education, in collaboration with educators throughout the state, has developed and adopted curriculum standards in the content areas of mathematics, communication, social studies, and science. Library media specialists [teacher librarian] in Kansas have developed library media program outcomes in alignment with the U.S. government Goals 2000 program and the Kansas Quality Performance Accreditation system. These newly drafted library media program outcomes support the concept of integrated instruction as proposed in subject area curricular standards.

Parallel to the national trends for library media specialists to become engaged in the teaching of information skills integrated into subject areas at all grade levels, the Kansas Association of School Librarians (KASL) Research Committee, in collaboration with the Kansas State Department of Education, embarked on a project to develop a model for assessing learning across the curriculum.* During 1994-95 the KASL Research Committee conducted a literature review and developed a preliminary assessment model. During summer, 1995, the Committee organized a two-day summer institute to refine the model and to develop rubrics for an interdisciplinary model for assessing learning across the curriculum. Participating in development of the model were teachers, administrators, and Kansas State Department of Education curriculum specialists. In fall, 1995, the Research Committee met to review and refine the model, including the rubrics for assessment. After revising the model, the Committee members presented the model for reactions at six regional workshops sponsored by KASL. Feedback from these presentations was favorable, and suggestions were incorporated in a second revision of the model in January, 1996.

During spring, 1996, the Committee received the American Association of School Librarians/Highsmith Research Award to test the model in a sample of Kansas schools. This paper will describe the Interdisciplinary Assessment Model, preliminary results of research testing the model, and implications for implementation of the model in schools.

Development of an integrated assessment model required establishment of a common language for library media specialists to work in various curriculum areas, a comparison of current state standards for subject areas, and, finally, creation of rubrics for each stage of the assessment model. Each of these steps will be discussed in turn.

IN SEARCH OF A COMMON LANGUAGE

"Assessment of student learning, the measuring of student's progress and performance... is being given serious attention across disciplines and at all levels of education." (Kuhlthau, 1994, p. IX) The problem encountered by library media specialists is integrating assessment across disciplines and grade levels. Needed is a common language, or model, to allow grade level or curricular area experts to communicate effectively.

Library media specialists currently integrate knowledge of the learning outcomes of each discipline or level of education with outcomes for critical thinking and information problem solving skills. Integration of instruction and assessment at this level demands an understanding of the vocabulary of each discipline as well. The goal of the KASL Research Committee was to find a common language among the Kansas State Department of Education assessment guidelines for reading, mathematics, social studies, science, Six-Trait Writing, and information problem-solving.

The Eisenberg and Berkowitz (1990) Big Six model provides the common language for library media specialists teaching information problem-solving. This model presents six steps for problem solving:

1. Task Definition: define the problem and identify the information requirements of the problem.
2. Information Seeking Strategies: Determine the range of possible sources and evaluate the different possible sources to determine priorities.
3. Location and Access: Locate sources (intellectually and physically) and find information within sources.
4. Information Use: Engage (e.g., read, hear, view) the information in a source and extract information from a source.

5. Synthesis: Organize information from multiple sources and present the information.
6. Evaluation: Judge the product (effectiveness) and judge the information problem-solving process (efficiency). (p. 24)

This Big Six model became the framework for establishing a common language across disciplines. The other common ground was the teaching process. The problem of interdisciplinary collaboration involves synthesizing complex, specific language and learning outcomes into a model that can be used effectively by teachers from all disciplines and grade levels and by library media specialists.

The common language for interdisciplinary collaboration evolved from an examination of the teaching process by Jane Dickerson, library media specialist at Morse Elementary School, Blue Valley Schools, Kansas. Ms. Dickerson perused Kansas standards for reading, mathematics, social studies, science, and Six-Trait Writing, as well as The Big Six, and created the following model which serves as the "common language" for these areas, with teaching as its focus. This teaching model identifies the following five steps, which are defined below:

1. Assignment
2. Plan of action
3. Doing the job
4. Finished product
5. Evaluation

All teacher/library media specialist collaborative teams begin with an *assignment*. This *assignment* aligns district and school curricular learning outcomes with appropriate discipline/grade level/unit outcomes. This integrated *assignment* and its outcomes are directly tied to the assessment that will allow the collaborative team to determine each student's current progress. The assignment requires the student to have a clear, complete understanding of the assignment or problem. The assignment creates a focus for successful task completion and evaluation.

The *plan of action* occurs when the teacher(s) and the library media specialist determine which discipline-related, problem-solving, and instructional strategies the student must use to complete the assignment successfully. The *plan of action* requires the student to choose the most appropriate strategy(ies) and give reasons for his/her choice(s). The *plan of action* may entail the analysis of tools, experiences, and available resources that would facilitate meeting the requirements of the assignment.

Doing the job causes the student, teacher(s) and library media specialist to focus on the requirements needed to complete the assignment (job) with all components in evidence. To successfully do the job, the student must have a clear understanding of the assignment/problem and choose the most appropriate strategy(ies) for completing the assignment. This step of the teaching model combines steps three and four of the Big Six, i.e., Location and Access, and Information Use.

The *finished product*, the completed assignment, reflects quality and the student's understanding of most facets of the problem. This product may be a correct response to a question, the solution to a mathematical equation, a report, chart, cooperative learning activity, research paper, or invention, as well as other forms of authentic assessment.

Evaluation is conducted by the teacher(s) and library media specialist with the student to appraise the student's completion of the assignment. The evaluation must be aligned with the assignment, the plan of action, doing the job, and the finished product. This evaluation rates the product and problem-solving process and requires the student to give reasons for the evaluation. Such assessment may enhance opportunities for the student to transfer this knowledge to a "real life" situation.

Integrated Model	Information Problem Solving	Reading	Math	Social Studies	Science	Six-Trait Writing
Assignment	Define Task	Read selection Read question	Understand the problem	Identify Issue for investigation	Recognize and define the problem	Develop ideas & content for audience
Plan of action	Develop information seeking strategies	Outline key terms & concepts	Choose problem solving strategy	Develop a plan for the investigation	Design a problem solving strategy	Further develop ideas and content for audience
Doing the job	Locate, access & use information	Choose appropriate information sources	Implement a problem solving strategy	Acquire information from sources; organize information	Implement a problem solving strategy	Refine the voice including strategy flow; proofread
Finished product	Synthesize & present the information	Apply appropriate information sources	Find & report conclusion	Choose & justify on the issue; present results	Interpret & communicate findings & conclusions	Submit to editor; revise
Evaluation	Evaluate process & product	Check response for understanding, accuracy & completeness	Evaluate conclusion for reasonableness of results	Evaluate process & product of the investigation	Evaluate findings for clarity, accuracy & real life applications	Publish; evaluate for audience reception & logic

Table 1: Comparing Teaching Stages Across Subject Areas

The terms in the integrated teaching model represent a common language for discussing instruction with teachers from various subject areas. Using this model and The Big Six, terms were drawn from Kansas subject area standards to prepare the following table of comparisons.

DESIGNING RUBRICS FOR AN INTEGRATED ASSESSMENT MODEL

Numerous assessment strategies were reviewed by the Research Committee, resulting in the selection of rubrics for application in the integrated assessment model. Rubrics are guidelines for evaluation; they are intended to provide qualitative descriptions or measures of the student's progress towards stated outcomes. Rubrics were developed, submitted to practitioners for reaction, and revised. Based on these reactions and preliminary application in classrooms, a generic rubric was created. The KASL Research Committee designed a rubric with four levels plus a state of nonachievement. Following are these levels, with level #4 the highest level of achievement:

NA	Not applicable or no evidence is available
1	Awareness
2	Understanding
3	Demonstration
4	Application

A rating of **NA** indicates that the student has produced no evidence that s/he attempted to address the assignment. There is no basis for evaluation.

A rating of **1** indicates awareness or knowledge of the process or product, as indicated by evidence the teacher and library media specialist have gathered. For example, in stage 1, the integrated assignment, the student in some way demonstrates awareness of the assignment or problem, e.g., verbally, nonverbally, or through a product.

"Understanding," a rating of **2**, indicates that the student has a basic comprehension of the problem or process, often expressed verbally.

"Demonstration," a rating of **3**, results from evidence provided by behavior and/or example.

Rating **4**, "application," suggests that the student has integrated the knowledge and is able to apply it in a real-life situation.

For each stage of the model, i.e., "Integrated Assignment," "Integrated Plan of Action," etc., the rubric described above is applied. For example, the "Integrated Assignment" provides the following rubrics:

4	Articulates a clear, complete understanding of assignment/problem.
3	Demonstrates understanding of most of assignment/problem.
2	Shows vague, unfocused understanding of assignment/problem.
1	Is aware of assignment/problem.
NA	Not applicable/nothing available

The rubrics for each stage of the model are presented in Table 2. These rubrics, combined with the integrated teaching model, provide library media specialists and teachers with a tool for planning, implementing, and assessing the integrated teaching of information skills. The complete model is found in the appendix. The section which follows describes the research which is testing the assessment model.

Integrated Assignment	Integrated Plan of Action	Integrated Doing the Job	Integrated Finished Product	Integrated Evaluation
4-Articulates a clear, complete understanding of assignment/problem.	4-Chooses the most appropriate strategy(ies) and gives reasons for choice.	4-Completes the assignment (job) with all components in evidence.	4-The quality of the product reflects an understanding of most facets of the problem.	4-Evaluates the product and problem-solving process and gives reasons without assistance.
3-Demonstrates understanding of most of assignment /problem.	3-Chooses a strategy after comparing possibilities	3-Submits the assignment (job) with few components missing.	3-The quality of the product reflects an understanding of many facets of the problem.	3-Evaluates the product and problem-solving process and gives reasons with assistance.
2-Shows vague, unfocused understanding of assignment/problem.	2-Chooses a strategy without comparison to other possibilities.	2-Submits assignment (job) with many components missing.	2-The quality of the product reflects understanding of some facets of the problem.	2-Understands the evaluation process but gives few reasons, even with assistance.
1-Is aware of assignment/problem.	1-Is aware of different strategies.	1-Is aware of assignment (Job) but has difficulty proceeding.	1-The quality of the product reflects understanding of few facets of the problem.	1-Completes the assignment but cannot give reasons for the errors in the product and problem-solving process.
NA-Not applicable/nothing available.	NA-Not applicable/nothing available.	NA-Not applicable/nothing available	NA-Not applicable/nothing available	NA-Not applicable/nothing available

Table 2: Rubrics for the Integrated Assessment Model

OVERVIEW OF THE STUDY

The KASL Research Committee identified Research Advisory Committee members who typified staff from the Kansas State Department of Education, school library media specialists at various levels, subject area teachers, and school administrators. The Research Advisory Committee met twice in August, 1996, to recommend research strategies and possible schools to participate in the study. The Advisory Committee monitor the project through reports sent by the project chair to members.

To assist in the planning and implementation of the project, the Research Committee identified an independent research consultant, Delia Neuman, Associate Professor, College of Library and Information Services, University of Maryland. Dr. Neuman participated in the design of the study, selection of research methods, and selection of schools by participating in meetings of the Research Advisory Committee. She also has participated by telephone in meetings of the researchers to address researchers' questions regarding data collection techniques and analysis of results.

Following are the research questions adopted for the project:

1. How does the model's usage facilitate student learning in selected grade levels and subject areas?
2. How does use of the model influence collaborative planning and integrated instruction?

Selecting Schools

Schools were selected to assure diversity on each of the following criteria: (1) level, i.e., elementary, middle school, high school; (2) size of school, (3) whether rural, suburban, or urban; (4) school climate, i.e., amount of integration of the teaching of information skills; and (5) library media specialist knowledge of the assessment model (all had attended workshops at which the model was described and used).

Due to time constraints (the researchers are employed in professional positions which limit their availability for travel and data collection), two categories of participating schools were established—case study schools and self-reporting schools. In consultation with the project consultant, the researchers agreed to concentrate efforts on three sites, representing elementary, middle, and high schools. These were designated "case study schools." One researcher was assigned to work with each case study school on a regular basis to visit, conduct interviews, and observe use of the model. The researchers observed lesson presentations and interviewed participating teachers and library media specialists. The researchers also regularly contacted the library media specialists by telephone.

A second type of school was designated "self-reporting." Library media specialists at self-reporting schools completed a "School Information Form," and their "research partner," a member of the Research Committee, contacted the library media specialist approximately every two weeks, using an interview guide. No school visits were made, but continuous monitoring of the model's use was accomplished through telephone contact.

RESEARCH METHODS

Research methods were recommended during the meetings of the Research Advisory Committee and during subsequent phone consultations with the research consultant. Phone conferences with the research consultant were augmented with faxed copies of instruments developed by the researchers and electronic mail communication. Instruments were created to gather data collected through interviews, classroom observations, and school walkarounds.

Precise data-gathering instruments were required to ensure standardization of data collection by the team of researchers, who included one half-time elementary school library media specialist, two full-time elementary school library media specialists, two high school library media specialists, one graduate student, one state department consultant, and one library and information science school faculty member. One researcher was assigned to each of the ten participating schools. Researchers working with case study schools had that school as their only assignment, while researchers working with self-reporting schools had one or two schools assigned. The graduate student and faculty member, who had more flexibility in their daily schedules, were assigned to gather data in any of the schools should an assigned researcher be unable to gather data at a critical time.

During the planning process, the researchers decided to make every effort to gather data during the planning, implementation, and summative evaluation stages of units.

Preliminary Results

By December, 1996, the three case study schools had each completed at least one unit of study using the integrated assessment model. The seven self-reporting schools had completed a total of four units, with one unit incomplete. The researchers met to review preliminary results, based on ten weeks of observations and interviews. During this meeting researchers met in two groups, those working with self-reporting schools and those working with case studies, to synthesize their findings to date. The researchers then shared their preliminary findings with each other and with the research consultant (via telephone conference). The two groups of researchers found that their results were compatible.

Additional data were collected during the conduct of a series of two workshops given in a school district during the first two months of 1997. These workshops were funded by a grant to improve assessment and integration of science teaching. Attending were 42 teachers representing all curricular areas in all grade levels. During the first workshop teachers were instructed on use of the model and asked to use the model to develop a unit of instruction during the intervening weeks between the workshops. During the second workshop session teachers assessed their experiences, and comments made during the ensuring discussion were noted. These reactions have been incorporated with data gathered at the other participating schools.

Research Question #1: How does the model's usage facilitate student learning in selected grade levels and subject areas?

According to preliminary results, teachers and library media specialists said that the model facilitated student learning in all grade levels studied and for units of any length. Furthermore, they reported that the "integrated assignment" stage of the model was a key to enhancing student learning. Following is a summary of interview results:

1. Students knew what they were doing and were on task.
2. Students had a sense of participating in the learning process.
3. Students demonstrated pride in the finished product.
4. Student learning is higher quality learning, i.e., teachers and Library media specialists said that students were employing higher level thinking skills after using the model.
5. Students were responsible for their learning, enhancing critical thinking.
6. Students learned that research can be a relatively simple process, like gathering data about book characters.
7. Students asked good questions.
8. The model makes students aware of what's expected of them.
9. The model is an advanced organizer which frees students to pursue the content.

Research Question #2: How does use of the model influence collaborative planning and integrated instruction?

While the integrated model is an assessment of student performance, preliminary results suggest that the model is a useful teaching tool. The model gives teachers and library media specialists a "handle" on information use and how it can be taught as a learning process. The library media specialists reported that the integrated assessment model is an effective and efficient planning tool which:

1. Enables the teacher to check the student's pre-knowledge;
2. Moves learning outcomes to the beginning of the project;
3. Makes it easier for a school to tie everyday instruction and assessment to the school improvement plan;
4. Encourages teacher/library media specialist collaboration, enhancing teacher satisfaction by working with other staff members;

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5. Apparently works with short (TWO day) as well as longer (several week) units; and
6. Improves teaching by keeping the teacher focused on outcomes and assessments.

In short, this model appears to be a tool which benefits teachers at least as much as students.

IMPLEMENTATION ISSUES

After attempting to implement the model, teachers, library media specialists, and researchers reported that the model is complex and that successful implementation requires adequate instruction. Introducing the model without follow-up does not ensure successful implementation. Following are implementation issues which have emerged:

1. Although the description of the model indicates that the *integrated assignment* and its outcomes are directly tied to assessment, the impact of this connection is sometimes underestimated by teachers and library media specialists. Some of the teachers were comfortable giving the assignment but did not know how to assess learning. Other teachers did not assess at all the students' understanding of the assignment. Those who did assess the assignment found that students were more likely to complete the assignment accurately, i.e., meeting the assignment's objectives. Our preliminary results indicate that assessing students' understanding of the assignment is the single most effective way of ensuring student success.

2. While teachers may be aware that students have vastly different and unique learning styles, their teaching strategies often do not reflect these student differences. Teachers tend to revert to traditional learning activities, e.g., written reports and oral presentations, without providing students the opportunity to use such talents as Gardner's spatial, interpersonal, bodily kinesthetic, intrapersonal, and musical intelligences (Gardner, 1993).

3. The "*plan of action*" of a unit should provide students a variety of strategies for completing the study; however, the options may be severely limited by the resources available at a school. A wide range of materials, formats, types of materials, and reading levels should be made available to address the wide range of students' abilities.

4. "*Doing the job*" was effectively accomplished by library media specialists and teachers in the study. Students are accustomed to completing learning tasks in the school and teachers are accustomed to supervising these activities.

5. The "*finished product*" assessment often confuses formative and summative evaluation. Teachers often assess the finished product but fail to work with students to assess the learning process—part of the "*evaluation*" step of the five-step assessment model.

6. Assessment of the "finished product" should include product-specific assessments to evaluate better the student's learning. The specificity is directly related to the requirements of the assignment. In addition, the assessments should go beyond "paper and pencil" assessments to enable students to use their unique abilities to demonstrate learning.

7. Teachers and library media specialists should be able to differentiate between a product and a process during assessment. They need to understand that both product and process play a role in student learning and are interrelated. Both have importance and both should be used in assessment activities. Typically, teachers evaluate products but do not encourage students to recognize and evaluate the process. Moreover, the product evaluations are usually teacher evaluations, neglecting to encourage student reflection and peer evaluation of products. In today's rapidly changing "information age," it is not possible to learn all of the facts or "content"; however, it is possible and desirable for schools to teach a learning process. This process should be routinely assessed.

8. Teachers must have a knowledge of the differences between criterion-referenced reporting and normative-referenced reporting of assessments. Traditionally, in norm-referenced terms, we think of comparing students to a national or state mean, for example, a standardized test like the Iowa Test of Basic Skills or the California Test of Basic Skills. Often, these comparisons do not have relevance to the classroom teacher, the school, or the student. By contrast, criterion referenced reporting compares the student's performance to a standard of excellence established by the teacher, the school, or the state. These standards are directly aligned with the school's curriculum and the classroom teacher's instruction and

assessment. Also, since the standards are tied directly to classroom instruction and assessment, they have more relevance for the student learner.

9. By using the integrated assessment model, library media specialists are involved in the assessment of the finished product. Traditionally, library media specialists are involved in design of the assignment, the plan of action, and doing the job. However, assessment has been left almost solely to the classroom teacher. Use of the integrated assessment model encourages the library media specialist to be engaged in assessment at all five stages of the learning/teaching process.

10. There is a need for support documents for library media specialists and teachers to implement successfully the assessment model. These documents should include sample lesson plans, lesson plan formats, grade sheets based on the five steps of the model, and examples of assessments that reflect multiple intelligences, moving beyond traditional pencil and paper tests.

11. The model should be expanded to include fine arts and vocational education in order to be useful across the curriculum. The arts, especially, enable integration of cultural studies to include literature, music, art of all types, theater, and dance.

In summary, successful implementation of the five-step integrated assessment model requires library media specialists and teachers to reconsider their roles working with students. If we truly believe that all students can learn and that the role of teachers and library media specialists is to enhance learning, new ways of structuring the learning process must include systematic and frequent assessment throughout the learning process. The five-step model provides a framework for planning learning activities to accommodate frequent and systematic evaluation for the benefit of the students' success.

CONCLUSION

The need for improved assessment of learning, especially the assessment of critical thinking and problem solving, was the stimulus for creating the Interdisciplinary Assessment Model. It is the result of a review of professional literature and of the collective thinking of library media specialists, teachers, school administrators, and university faculty. Creation of the model required an examination of assessment strategies, establishment of a common language for library media specialists to work in various curriculum areas, and a comparison of current state standards for subject areas.

Implementation of the model has been the subject of research by the KASL Research Committee and Kansas State Department of Education, revealing that the integrated assessment model is effective as a planning and teaching tool for library media specialists and teachers. Research has also revealed that effective implementation requires instruction and tools which will enable teachers to change their instructional strategies to more effectively engage the student learner and to provide feedback to the learner.

Revision of the model will occur after the Research Committee analyzes the findings of research when the data-gathering is completed. At that time, the Committee will consider addition of the arts and vocational education to the integrated assessment model.

NOTES

While the persons listed were responsible for writing this paper, all Kansas Association of School Librarians Research Committee members contributed ideas to the model presented here. Those committee members are: Shelia Blume, Judy Burbach, Carol Fox, Jim Hathaway, Latane Kreiser, Betsy Losey, Roma McConkey, Mary Schumacher, and Rosemary Talab.

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MEETING DRUG INFORMATION NEEDS OF ADOLESCENTS

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ABSTRACT

Drugs are an important life concern of adolescents, yet statistics show alarming and disturbing increases internationally in drug abuse. This paper reports on research that examines how adolescents cognitively process information about drugs. It explores why they chose and rejected information, and how they put it to use. The findings have important implications for the role of school libraries in the provision of drug information, the teaching and learning process, information literacy education, as well as for the role of teachers and teacher-librarians in shaping the knowledge and attitudes of adolescents toward a drug-free lifestyle.

INTRODUCTION

Adolescence is acknowledged as a period of transition: a time of transformation of close relationships with parents and family members, and the challenge of new relationships with friends and peers; a time of learning to negotiate new social support networks, and a time of accelerated independence, developing self-concept and establishing boundaries for acceptable behavior. During this time, patterns of attitudes, values and behaviors undergo considerable transformation. Conformity and the need to belong are strong, driven by a sense of personal integration and coherence, as well as pressures of peer group formation and influence (Drummond, 1991; McDonald & Towberman, 1993).

Considerable research exists about adolescent drug abuse and its consequences, as well as the complex interaction of biological, social, and psychological variables shaping its use. It is known that adolescence is when the first experience with drugs usually occurs, and when experimenting with drugs is often most active. It has been found that associating with drug-using friends is a strong predictor of drug use. Adolescents who used specific drugs in the last 30 days almost invariably had friends who also used these drugs (Dinges & Oetting, 1993). In addition, there is evidence to suggest that frequency of parental substance use is positively related to adolescent substance use (Anderson & Henry, 1994).

The statistics of adolescent drug use are sobering. thirty-seven percent of the total US population aged 12 and older have used marijuana, cocaine or other illicit drugs at some times in their lives. Current usage patterns among adolescents aged 12—17 show that they are polydrug users (Wodarski, 1991, p. 668). According to the Monitoring the Future Survey on Drug Abuse, undertaken by the National Institute on Drug Abuse (NIDA),48.4% of all American high school seniors have used illegal drugs; 41% of 10th graders have used drugs at some point, and 28.5% of 8th graders have tried one or more drugs. More than 21% of seniors, 17.2% of 10th graders and 9.1% of 8th graders are current users of marijuana. The use of cocaine amongst 8th and 10th graders increased between 1994 and 1995; and crack cocaine use increased among 8th and 10th graders between 1992 and 1995. Overall, the use of illegal drugs by adolescents increased significantly between 1992 and 1995, representing a reversal of downward trends observed for several years. The scenario in Australia is no better. Statistics from the New South Wales Health Department Drug and Alcohol Directorate (1993) show that in the 15—34 age group, 51% of drug caused deaths were due to alcohol, and 33% were opiate caused deaths.

Equally disturbing are emerging trends in adolescents' attitudes and perceptions about drug use. In 1995, continuing a downward trend, significantly fewer adolescents felt that there was great risk of people harming themselves when they use marijuana, crack, or powdered cocaine. These students also acknowledged that it is "very easy" or "fairly easy" for them to get these drugs (National Institute on Drug Abuse [NIDA], 1995). At the same time, there is evidence indicating that drugs are an important life concern for adolescents. Poston-Anderson and Edwards (1993) studied girls aged 13 and 14 to identify their life concerns, defined as "any problems, concerns or worries they had in the last month." (p. 26) The study showed that concerns revolved around relationships with peers, parents and family, concerns about drugs and their friends, and concerns about education and work, including choosing a career, schoolwork and final exams.

Given that adolescents spend the majority of their lives in school, a school is an important place for the provision of drug information to shape their values, attitudes and practices towards a drug-free lifestyle, and a vital forum for implementing change. This is acknowledged by the presence of drug information in school curricula across the world. Here adolescents learn basic knowledge about drugs and their consumption and usage, approach to self-management and maintenance, laws and enforcement, as well as the broader context of coping with living, problem solving and decision making. The school library also has an important role to play in successfully designing information services and programs for this significant social problem, particularly programs that are integrated into the larger pattern of students' lives. Poston-Anderson and Edwards's study (1993) however showed that more than half of the girls did not see the school library as being helpful in meeting their life concerns, especially those related to relationships, including drugs.

Why does this drug problem continue, despite the extensive range of drug information programs and services for adolescents? Researchers know little about the effective prevention of drug abuse among adolescents. What happens in the minds of adolescents when they are provided with this plethora of drug information? Other issues that have to be addressed have to do with the type of interventions, their subsequent foci, and how interventions affect groups of adolescents differentiated by gender, culture and age.

AIMS AND CONCEPTUAL BACKGROUND

This research sought to explore how adolescents cognitively interact with drug information that they are exposed to in the course of their daily lives. Specifically it sought to understand how adolescents' existing knowledge about the drug heroin was modified by exposures to information about this drug, what shaped this interaction, and what were the cognitive effects of this modification. Based on this, the research also identifies some implications for teacher-librarians and teachers in the provision of drug information.

The conceptual framework for this study is derived from cognitive information processing, and specifically the work of Bertram Brookes. Brookes was Reader in Information Science at the University College of London School of Librarianship and Archives from 1966—1977. He believed that understanding the interaction between the private, inaccessible thoughts and mental images of people and the public recorded knowledge was fundamental to providing appropriate information services designed to meet the needs of people. Brookes explicated this notion of cognitive interactions as an abstract equation which he expressed as $K[S] + DI = K[S + DS]$ (Brookes, 1980, p. 131). By this equation, Brookes was simply stating that in the process of doing something with information, a person's existing knowledge structure $K[S]$ was changed by an increment of information DI, and this modification had some effect, a changed knowledge structure $K[S + DS]$ where DS indicated the effect of the modification. He saw the equation as an interactive process of what people already know, how what they know changes through selectively taking in information, and the effect of these changes.

Brookes argued that people's internal private knowledge was the coherent summation, integration and transformation of many bits of information selectively chosen, absorbed and ordered from stimuli encountered in daily life. He saw people's knowledge as a "structure of concepts linked by their relations," (Brookes, 1980, p. 131) and postulated that as a result of exposure to information, these knowledge structures could be modified, and that these modifications resulted in a range of cognitive effects. Central to this process is the widely held assumption that information makes a difference to what people already know, that it has some effect.

The role of existing knowledge has long been recognized in educational theory and practice. Ausubel's assimilation theory of cognitive learning (Ausubel, 1963) asserts that new knowledge and meaningful learning result when people consciously tie new knowledge to relevant concepts already a part of their existing knowledge. Existing knowledge provides an anchor, the scaffolding for the selective integration of information, and is used to develop conceptual bridges. The concept of learning is built on these ideas. Learning is directed to bringing about changes and growth in people's knowledge, skills, attitudes and values. This learning takes place through continual exposure to information, and through classroom activities designed to foster the take-up and integration of this new information to some effect, generally measured through examination and continuous assessment. Learning assumes that knowledge is not static and changes in form and content, and this takes place over time.

However, there is only limited research available that addresses the question of the measurement and characterization of changes in people's knowledge structures, and the perceived effects of these changes. While a great range of research across many disciplines has been undertaken in many aspects of memory, cognition, text comprehension, and domains of knowledge, this work appears to be quite fragmented and disparate, and does not provide a cumulative body of knowledge about the dynamic nature of how knowledge grows and changes.

In the educational research on how knowledge changes, a number of common concepts have been developed including coherence, structural centrality, inferencing, and typicality. Studies of children by Chi and associates (Chi & Koeske, 1983; Gobbo & Chi, 1986; Chi, Hutchinson & Robin, 1989) focused on the way in which adolescents' knowledge structures about a specific topic differed according to whether they were novices or experts. The studies showed that as their knowledge became more detailed and comprehensive, their knowledge structures showed more local and global coherence, that is, they showed a clear hierarchical organization of concepts, as well as greater structural centrality, that is, concepts appeared to be more interrelated.

Little is known about how adolescents' knowledge changes when they are exposed to information about drugs. Given increasing levels of drug abuse, at a time when a plethora of information services exist to intervene in this problem, understanding information processes and the effects of information exposure are seen as critical to the development of information services that are more responsive to adolescents. In schools, this is an important role that can be provided by teacher-librarians. Teacher-librarians, in understanding how adolescents process drug information, may enable them to more effectively browse, connect with and interpret appropriate information relevant to the help and assistance they need. With clearer perception of how adolescents process this information, teacher-librarians may more effectively restructure and repackage information that is more closely targeted to their needs to ensure greater receptivity. In addition, such understanding can help teacher-librarians provide the resource and curriculum advice and guidance to teachers in the planning of teaching sequences related to drug curricula.

RESEARCH METHODOLOGY

Selection of Participants

Four girls aged 17 years were non-randomly selected to work with in-depth to gather thick data. They were in their final year of high school at a Catholic college in Sydney, Australia, and came from quite different cultural backgrounds. It is acknowledged that peering into the minds of people is difficult, and at a practical level, what exists in a person's mind is commonly externalized through verbalizations, either written or spoken. A key criterion in the selection of the girls was thus their high level of fluency in written and spoken English.

Design

A quasi-experimental approach was used to collect the data. It was felt that approaches such as case studies, questionnaires and naturalistic observation would not permit the in-depth, well controlled probe into the process of knowledge creation and change required, nor enable the perspectives of adolescents to stand out. The experiment consisted of two broad phases: the A phase involved baseline measures of the girls' knowledge, and the B phase involved the introduction of staged exposures to information, and changes noted.

Environment and Focus of the Research

The research was placed within the context of the established school curriculum in New South Wales. The specific topic centered on the drug heroin, drawn from the module "Drug use and HIV/AIDS" in the subject "Personal Development, Health and Physical Education." This module aims to develop in students an awareness of the nature and incidence of drug use, an understanding of its impact on individual and community health, and application to personal behavior. A hypothetical task was provided to set realistic boundaries on the content. The task was a hypothetical presentation at a public forum focusing on the nature and incidence of the drug, implications for the individual, and implications for the community.

Procedures

The A phase and B phase of the data collection were implemented using the following plan, which included time for the girls to read, reflect, and take refreshment breaks:

(a) acquire and map base line knowledge structure of each girl
(b) first exposure to information
(c) acquire and map base knowledge structure after first exposure
(d) second exposure to information
(e) acquire and map base knowledge structure after second exposure
(f) third exposure to information
(g) acquire and map base knowledge structure after third exposure
(h) debriefing and discussion session.

Exposures to Information

The exposures to information were in the form of pre-determined amounts of different, publicly available print-based information about heroin, derived from three authoritative sources (Byrski, 1986; CEIDA, 1989; CEIDA, 1990). Each exposure dealt with a different aspect of heroin, and the order was determined through the pilot study involving a similar group of girls. The exposures were, in order (1) nature and history of heroin; (2) individual implications of heroin use; and (3) community implications, such as treatment and recovery.

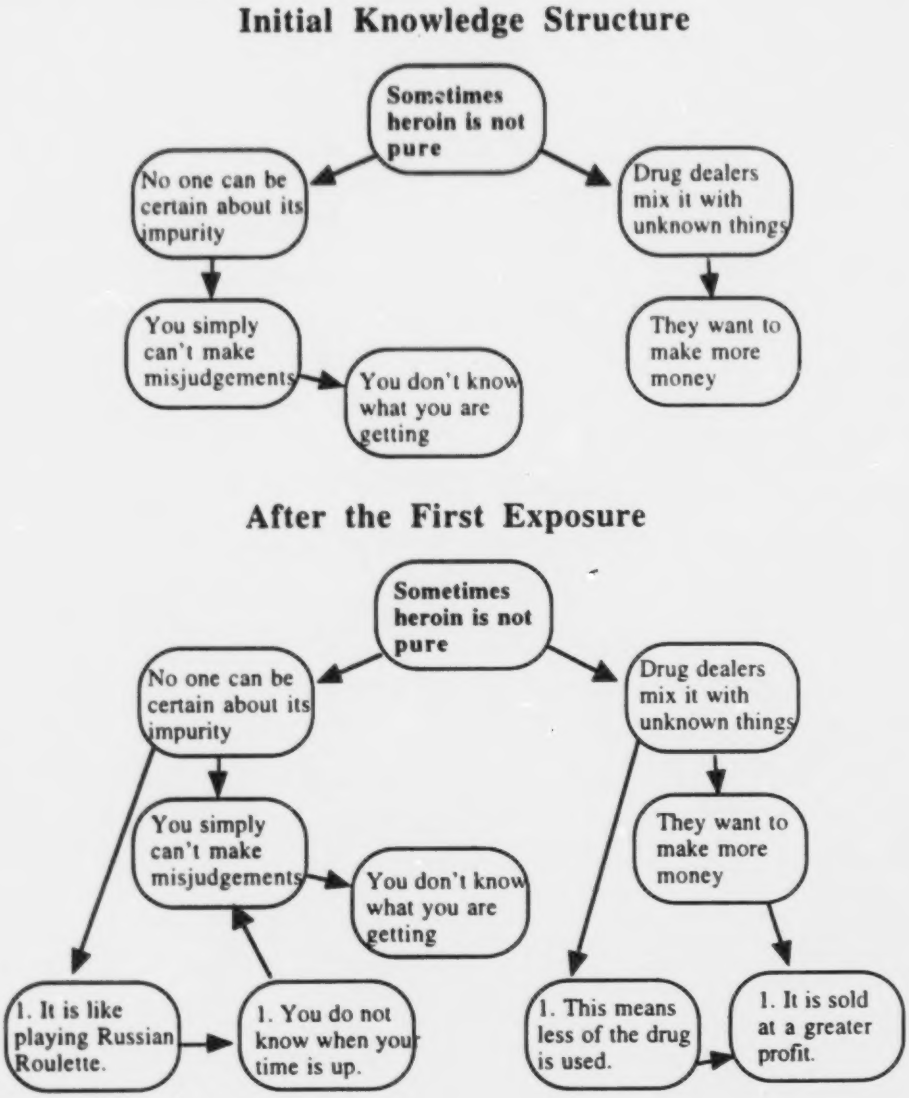
Data Collection

The phases were repeated three times without varying the procedure. A combination of free generation written discourse and question answering protocols through a semi-structured interview was used to acquire the knowledge of the girls at each phase. These are common methods for exposing and analyzing the content of people's knowledge (Graesser & Clark, 1985). In the free generation stage, the girls wrote down all they knew about the drug heroin, in the context of the hypothetical task. Following this, their transcripts were examined to identify areas for probing in the interviews. In the question answering stage, the girls answered a set of how, when, where, why, and what questions to elaborate their written responses, providing greater richness to the data. This process took approximately five hours for each girl. The debriefing session focused on identifying the enabling effects of the exposures, as well as discussing their perceptions of the process. This provided a set of responses that collectively formed the knowledge of each girl prior to the information exposure, and after each exposure to information, as well as a set of statements related to effects of the exposures.

Data Analysis

In order to establish the changes to the girls' knowledge about heroin and the effects of the exposures, the acquired knowledge was combined and then mapped to create knowledge structures. The maps were in the form of Conceptual Graph Structures (Graesser & Clark, 1985). These graphical representations consisted of self-contained units called statement nodes interrelated by a network of relational arcs. The unit of knowledge was a sentence that contained at least two concepts linked together expressed in the natural language of the girls.

The data were analyzed qualitatively. Using an inductive approach based on constant comparative method (Glaser & Strauss, 1967) the perceived effects of the information exposures were identified, and conceptualizations of these were developed. This was followed by identifying and conceptualizing the changes to the girls' knowledge structures, that is, alterations to the initial structures in some way. This involved constructing the conceptual graph structures for each stage and systematically comparing these structures across the different exposures, and isolating all instances of structural changes. Figure 1 illustrates a conceptual graph structure, as well as provides an example of a change in structure expressed by Girl #3. This change was associated with the stated effect: "I learned that the added ingredients posed greater danger. I didn't know this."


Initial Knowledge Structure

After the First Exposure

Sometimes heroin is not pure
No one can be certain about its impurity
Drug dealers mix it with unknown things
You simply can't make misjudgements
They want to make more money
You don't know what you are getting
Sometimes heroin is not pure
No one can be certain about its impurity
Drug dealers mix it with unknown things
You simply can't make misjudgements
They want to make more money
You don't know what you are getting
1. It is like playing Russian Roulette.
1. You do not know when your time is up.
1. This means less of the drug is used.
1. It is sold at a greater profit.

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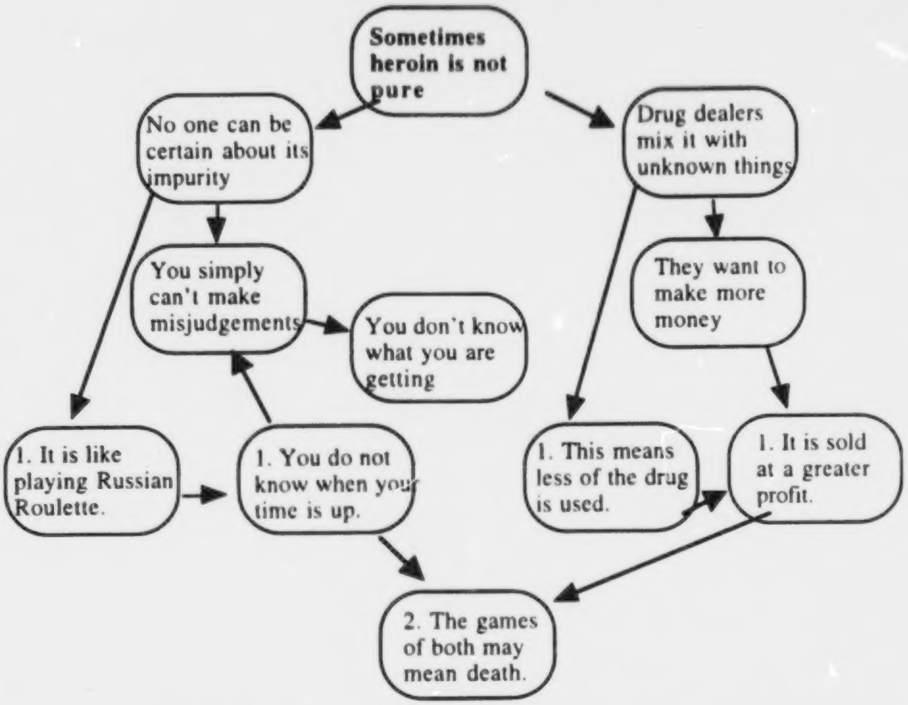
After the Second Exposure


Sometimes heroin is not pure
No one can be certain about its impurity
Drug dealers mix it with unknown things
You simply can't make misjudgements
You don't know what you are getting
They want to make more money
1. It is like playing Russian Roulette.
1. You do not know when your time is up.
1. This means less of the drug is used.
1. It is sold at a greater profit.
2. The games of both may mean death.

In this example, the initial knowledge structure contained two sets of nodes related to the purity of heroin. One focused on the role of the drug dealer, and the other on the heroin user. After the first exposure, these were developed further as separate structures. In the user-centered structure, nodes were inserted to explain why a misjudgment couldn't be made. In the drug dealer structure, a small goal-oriented structure was developed. After the second exposure, these two separate structures were linked together by the node "the games of both may mean death." This node was the culmination of both structures, based on "results in" relations.

FINDINGS

What did the girls do with the heroin information provided in the exposures? It was clearly evident that the information enabled them to do a number of things, and that their initial knowledge about heroin was changed. This is not surprising. Emerging out of the study however, were a distinctive pattern of effects that illustrated how and why they used the information, and some reasons for their selection and rejection of this information.

The Perceived Effects

The conceptualizing and labeling of the perceived effects were based on "picture," a term frequently used by the girls when describing the effects. Five effects of exposures to information were identified: (1) get a complete picture; (2) get a changed picture; (3) get a verified picture; (4) get a clearer picture; and (5) get a position in a picture.

Get a complete picture. Get a complete picture was derived from indicators that collectively suggested the girls utilized the information to build an expanded, more complex picture about heroin. It appeared to take place in four ways. Firstly, general knowledge was expanded hierarchically with more specific detail and examples. Secondly, they built up an expanded picture by aggregating the various aspects of a topic into a complete picture. Thirdly, they made new connections between ideas that they didn't realize before. Fourthly, the new information helped them remember and recall ideas that already existed elsewhere in their minds that they hadn't thought of at the time. In essence, the information exposures enabled the girls to construct an expanded picture about heroin.

Get a complete picture was manifested in the revised knowledge structures that were shown to be more inclusive, elaborative, and integrative. A more inclusive knowledge structure resulted when they added specific instances, examples or types to more general statements, such as identifying a range of specific effects. The initial knowledge structure was changed from a general structure to a structure that showed greater specificity and precision of ideas through the hierarchical building of set membership. A more elaborative knowledge structure resulted when existing nodes were expanded by defining them, and/or describing their characteristics, processes, styles and causes. For example, existing knowledge was often expanded by providing static properties such as direction and quantity; by showing how an action occurred; by describing causes and consequences; and by elaborating goals, reasons, and outcomes. In a few cases, some of the revised knowledge structures showed the integration of separate substructures.

Get a changed picture. The girls utilized the information to make changes to their existing ideas. The information exposures enabled them to determine that existing ideas were incorrect or inappropriate and then remove them from the picture. In some instances, removing an incorrect idea was accompanied by replacing it with a new, correct idea.

The analysis showed that existing knowledge structures appeared to go through three stages of revision, conceptualized as "construction," "deconstruction" and "reconstruction." In order to get a changed picture, the girls built up a more detailed, descriptive picture by first appending inclusive and elaborative structures. This often enabled them to establish that some of their existing ideas were "wrong" or "not correct." This led to a stage conceptualized as "deconstruction." Here, the problematic ideas were removed by deleting. After deleting, the girls utilized the information to rebuild and/or further extend their pictures, a stage conceptualized as "reconstruction." The deleted node was often replaced by another node which in turn was the starting point for substantial appendings that extended the knowledge structure, resulting in other effects, such as get a complete picture and get a position in a picture.

Get a clearer picture. All the girls made use of the information to get a clearer picture. In these instances, they perceived that the information shed more light on their ideas so that the ideas could be seen more clearly, with greater understanding and clarity; and that the exposures enabled them to sort out, organize and sequence ideas more meaningfully. In other instances the information enabled them to resolve confusions and indistinctions.

Two types of revised knowledge structures were evident. Firstly, the girls consistently inserted nodes to tell "how" or "why" their ideas were related. These explanations added greater clarity and understanding to their ideas. In some cases, they constructed knowledge structures that showed precision and specificity of ideas through building up set membership details or specific property/attribute details.

Get a verified picture. The conversations with the girls made it apparent that they were able to utilize the information to verify existing ideas, especially where some doubt existed in their minds about their certainty, and even though on the surface the ideas appeared stated as certain. In doing so, this enabled them to remove doubt about, or establish with more surety, an existing idea. This effect was labeled get a *verified picture*.

Four types of revised knowledge structures were associated with this effect. These were labeled: no change, emphatic change, inclusive change, and defensive change. In some cases, a perceived effect was not associated with any change to knowledge structures. One possible explanation for this might be that initially they were guessing, and these guesses were expressed tentatively as fact, and there was no basis for identifying this distinction. In a number of knowledge structures, there was repetition of nodes which appeared to be used to add weight or emphasis to a particular statement, primarily personal statements, for example, repeating the idea that the most effective approach to dealing with the problem of drug addiction was through drug education. In a few instances, verification was shown through appending more precise, specific ideas. Likewise, a change of facts encouraged the girls to defend and reaffirm a viewpoint based on the facts before they were changed in their knowledge structures. Overall, get a *verified picture* was seen as a continuum: sometimes it meant moving from doubt to certainty; sometimes it helped to confirm existing knowledge; and sometimes it strengthened their belief in their existing position or knowledge.

Get a position in a picture. The girls indicated that the information in the exposures helped them to develop and express an opinion about the pictures they had built up, to state their view, to derive conclusions, and to make predictions and reflections based on facts.

The changed knowledge structures associated with this effect were conceptualized as: reactive; formative; predictive; and potential positioning. In reactive knowledge structures, position statements were appended that expressed a reaction, generally by agreeing or disagreeing with some of the ideas that they had incorporated into their structures. Some of the revised knowledge structures of the girls showed a formative change. This was where they formed a personal conclusion based on the facts provided in the exposure. In a few cases, the revised knowledge structures provided no evidence of a statement of a position associated with the effect. Here they tended to acknowledge the potential to be able to use the set of facts at some future time to construct a case or an argument or to present a viewpoint.

In processing the information in the exposures, the girls got expanded, or changed, or clearer or verified pictures, or were able to state positions. Their knowledge was not static; rather, it evolved, and it evolved differentially for each girl. They selected information for specific purposes, to meet particular cognitive needs. While an overall pattern seemed to be get a complete picture -> get a changed picture -> get a clearer picture -> get a position in a picture, this was not necessarily a consistent depiction of how the girls processed the information. At any one time, some information in an exposure was helping to get a complete picture; other information from that exposure was creating a changed picture elsewhere in their knowledge base; and other information was helping to develop a position statement.

Selection of Information

The girls were highly deliberate and selective in what information they chose to absorb and to reject. They were not passive vessels into which information could be poured, and then absorbed in toto. A number of factors contributed to this. Their personal encounters and experiences with the ideas and people associated with heroin provided ways of identifying related information and hooks for linking new information. For example, all the girls picked up on the information about Coleridge using opium, whereas they did not select information about a number of other people mentioned. They made it clear that they were currently studying the life and poetry of Coleridge in their English classes, and had not been aware of Coleridge's association with heroin. In doing so, the information helped to make connections to, and elaborate, other existing knowledge structures.

All the girls selected information about the effect of heroin on driving, while ignoring other significant effects. Discussions indicated that this was important because they were at the age of acquiring learner driver permits, undertaking driving lessons, or obtaining provisional driving licenses. Similarly, all girls incorporated information about the effect of heroin on pregnancy. One girl explained "this is something I will be thinking about in the near future—you know, getting married and having kids." Their interest here seemed to coincide with their life cycle—a time when young women are dating and beginning to making decisions about relationships, marriage, and child raising. Immediacy in terms of aspects of their own age and life cycle appears to have played an important part in the selection process.

Personal interest provided a strong basis for selecting and rejecting information. One girl said that she was only interested in Australian history, and paid little attention to the historical origins of heroin, commenting: "The early history doesn't interest me. I didn't take much interest because it is still too remote from me. I can remember quickly reading over the information on the Greeks and Romans, but didn't take any in. I looked quickly over the information until I found something I could relate too, like the use of the drug in Australia."

Overall for these girls, the selection of information appeared to be based on perceptions of personal relevance, interest or influence derived from their personal goals, their learning context, current stage of life cycle, and/or current state of knowledge. What was also evident was that the same information had different effects for different girls. For one girl, the information about Coleridge enabled her to get a complete picture about the history of heroin; for another, it enabled her to get a position in a picture about the effect of the drug on people's creativity; and for another, it gave greater strength to her view of Coleridge as a creative poet. The process of utilizing information, the process of constructing knowledge and the process of utilizing that which is constructed were individual processes, shaped by existing pictures and person-in-context.

Existing knowledge also shaped what the girls chose to accept. This was an important basis for information gathering. Each girl's initial knowledge was markedly different, and even though they were all exposed to the same information, and in the same order, the revised knowledge structures were also markedly different. It cannot be assumed that because all students are learning a specific topic and require information on it, that their knowledge is the same, and that they will process information in the same way. The evolution of a person's body of knowledge about a particular topic is not a random acquisition of information, but is a directed and purposeful process toward making personal sense. It is not the mental transfer of stable blocks of facts from an external source to an internal source, rather, it is a processual interaction which constructs and produces effects; it is a making and a remaking, a destroying and a rebuilding. Information acquisition is purposeful, transformative rather than merely additive. The girls did not grab ideas and attach them anywhere for the sake of knowing more. They manipulated and modified their existing knowledge to enable the inclusion and integration of new information in meaningful ways by making adjustments such as reorganizing, repositioning, and regrouping ideas. They also made alterations when faced with conflicting information. They used the information to make personal sense, to move on in their understanding.

IMPLICATIONS FOR TEACHER-LIBRARIANS

Collection Development

Specific facts seemed to have been important to the girls in constructing their revised knowledge structures, and these facts played different roles at different times in the utilization process. The immediate implication is to swamp adolescents with facts. School libraries tend to be fact oriented, characteristically providing factual information that is authoritative, accurate, and recent, in essence, socially sanctioned information that doesn't encourage adolescents to take drugs. However, this is not necessarily the information that adolescents require. They want more than facts when accessing information. They want to confirm doubts, establish certainty of ideas, and test their belief in particular ideas. They want to form opinions, develop conclusions. They want to know of the experiences, viewpoints and different perspectives of people, including drug users, so that they can make connections and make decisions. Adolescents should not be immediately swamped with facts, in the hope that the provision of the specific facts might provide the needed pictures or cognitive effects. Rather, the implication is the need for teacher-librarians to focus on the desired cognitive effect, the sense and meaning that adolescents want to create for themselves through accessing information, and to understand how this effect is best met for each person, and to have available the appropriate information, factual or otherwise required by the individual to achieve the desired effect.

Too often presenting the facts conveys the idea that simply making the information available to adolescents will convert their existing drug problems into non-problems, that without any special effort on behalf of adolescents, truth and positive action will prevail. The study shows that no matter how compelling, or authoritative information might be in the minds of others, no matter how useful someone else might think the information is, these qualities do not guarantee its receptivity and utilization.

Collections related to drug information need to be responsive to the kinds of help that adolescents want about drugs. An appropriate collection might reflect a mix of factual information, information tailored to specific aspects of the life cycle of adolescents and targeted to specific age groups, resources that provide personal accounts and stories of drug users, multiple perspectives and interpretations on drugs, that help adolescents build arguments, viewpoints, and make decisions. The collection also needs to include resources that reflect the perspective of adolescents themselves, even resources written by adolescents. This may mean a refocus in the provision of content from the transmission of a mass of facts considered "true," to a more careful, perhaps limited selection of content based on understanding the kinds of helps, utilities, or cognitive utilization's that students are seeking.

More specifically, the study suggests that selecting sources of information to match more closely where adolescents are at in their personal and social experiences and physiological development may mean that it is utilized more effectively and integrated more meaningfully into their existing knowledge. Targeting the provision of information to specific aspects of the immediate contexts and life stages of groups of people, rather than trying to cover all circumstances of large heterogeneous groups, may be a more productive step forward.

Access to Information

The findings provide an approach to making electronic information retrieval more effective in meeting the drug information needs of adolescents. Electronic database systems are designed to be accessed through a range of document descriptors, such as subject headings, author's name, type of publication, and date—all related to accessing facts. However, the types of helps identified in this study provide an approach for allowing a person to enter the system, not just in terms of the content or document description, but also from the perspective of the cognitive effects or helps that they might seek, such as: wanting facts, opinions and viewpoints, details, arguments, explanations, identifying misconceptions. For example, a user might desire to locate information about heroin that provides explanations (get a clearer picture), or position statements (get a position in a picture) or facts that elaborates their current understanding (get a complete picture). They may be able to profile their current level of knowledge in some way, and then link to documents which elaborate, or explain, or provide position statements as required by the person. This kind of access could contribute to enhanced browsing, connecting, interpreting, and more effective resource selection matched to need.

Dialogue with Adolescents

Teacher-librarians have an important role to play in the information exchange process. All too often the dialogue between student and teacher-librarian focuses on identifying content and extent of catalogue use, and then matching content to specific sources. Traditionally, the questioning approach has revolved around subjects, authors, keywords, titles and formats.

This study suggests a new way of looking at the form of dialogue. This approach gives attention to understanding the kinds of cognitive effects desired, for example, explanations about how and why, or a range of viewpoints or perspectives about a particular topic, or confirming a particular aspect. In other words, the dialogue would take a constructivist stance, seeking to ascertain how people want to move on cognitively from where they are at with a particular content area, and seeking to establish the connections and links already existing between ideas. The outcome for the teacher-librarian would be a sharper understanding of the needs of adolescents from the adolescent's perspective. This could play an important role in preventing premature diagnosis of the information need, as well as ensuring greater user satisfaction.

Kuhlthau (1989), in her extensive studies of the information search process of school students, has highlighted both the active sense-making role of individuals in finding meaning that fits with existing knowledge. A significant finding by Kuhlthau in relation to the early stages of the search process was school students' low level of confidence with information seeking. This underscores the importance of the nature of intervention or mediation by teacher-librarians when students embark on information seeking activities. Providing this intervention in terms of ascertaining the kind of cognitive helps the students are looking for could help them develop more meaningful searching and outcomes-related goals. Focusing on desired cognitive pictures in the dialogue may also help reduce the uncertainty and its affective symptoms of anxiety and lack of confidence.

Instructional Design

As an extension of the above ideas, the findings of this study have implications for teachers and teacher-librarians in designing classroom instruction. Understanding the types of information utilization that take place shifts the focus of learning from the content and finding the right answer to the question, to the process of learning, and particularly to understanding where individuals are at with their learning process. By understanding how cognitive change happens in relation to the stream of information that is provided to students, teachers can create opportunities for more meaningful use of information by adolescents by explicitly designing learning activities that facilitate the development of different types of pictures.

This has implications for the nature of the classroom environment. It suggests more active process-oriented and cognitive effects-oriented questioning; more opportunities for students to reflect on their learning process; shaping of learning goals in terms of cognitive effects; and greater emphasis on evaluating the process of learning, rather than on making judgments about the mastery of content and the regurgitation of facts. It may also help teachers set more appropriate goals in learning, by identifying and making explicit the kinds of pictures they want to create in class.

This is what information literacy is all about. In the school environment, information literacy is fostered through the development of a range of intellectual skills centering on: defining the tasks for which information is needed; locating appropriate sources of information; making judgments about, selecting and recording relevant information; understanding and appreciating this information and being able to combine and organize it for best application; presenting the information learned in an appropriate way; and evaluating the outcomes in terms of task requirements and increases in knowledge.

CONCLUSION

Teacher-librarians have a major responsibility in understanding how adolescents they work with cognitively process information. The provision of effective information services to support their learning and to help them with their life concerns rests upon this. This kind of service is individual, flexible, and situated in the context of the real world of adolescents. It acknowledges that adolescents are selective and constructive in their use of information, that their information needs and their information goals vary. Enhancing their access to drug information through a tailored collection, improved database access, more effective instructional design and quality dialogue may well mean a greater quality of life for these adolescents, if not a question of life and death.

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LIVING AND LEARNING IN THE GLOBAL VILLAGE

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ABSTRACT

This paper begins with a discussion of some of the promises and pitfalls confronting education in the Information Age. After exploring the business motivation that drives the education agenda and examining what some futurists are calling the end of the job, we identify four principles or themes that could help transform education as we approach the millennium. We argue that critical literacy, connectivity, creating a civil society and critical multiculturalism can foster an educational system that could resolve economic, cultural and social inequities. The information highway offers unprecedented opportunities for educators to create collaborative learning environments that will stimulate critical thinking skills and academic excellence among all students.

INTRODUCTION

There is an old rabbinic tale, which goes: And the Lord said to the Rabbi "Come, I will show you hell." They entered a room where a group of people sat around a huge pot of stew. Everyone was famished and desperate. Each held a spoon that reached the pot but had a handle so long it could not be used to reach their mouths. The suffering was terrible.

> "Come, now I will show you heaven," the Lord said after a while, they entered another room, identical to the first(the pot of stew, the group of people, the same long spoons. But there everyone was happy and nourished. "I don't understand," said the Rabbi. "Why are they happy here when they were miserable in the other rabbi and everything was the same?" The Lord smiled. "Ah, but don't you see?" He said. "Here they have learned to feed each other." Aram Das

As we are about to embark upon the new millennium Aram Das' tale assumes even more relevance as it illustrates the dilemma that we face in living and learning in the global village. The global village, that hypothetical construct first popularized by Marshall McLuhan more than thirty years ago, has now become a reality. The world is shrinking, traditional political economic and social boundaries are being redefined daily. Global networks such as The General Agreement on Trade and Tariffs (GATT), the Maastricht Accord, the North American Free Trade Agreement (NAFTA) and, of course, the Internet have changed the way we work, teach and live. "The shift from an economy based on material energy and labour to one based on information and communication further reduces the importance of the nation state as a critical player in guaranteeing safety and security for its citizens." (Rifkin, 1995, p. 236) Some see the development of the global village as a way of extending business control over our lives and continuing to exacerbate the differences between the haves and the have-nots, the north and the south, and the first and third worlds (Barlow & Robertson, 1994). While others see an opportunity for restructuring schools and society to create a world of equality and social justice that could lead to moral spiritual and educational growth for all (Cummins & Sayers, 1995). Governments, faced with increasing debt loads and pressure from tax payers, have singled out education, social services and health care as areas of major financial cutbacks. In doing so, they have complained that our educational systems have failed in providing a skilled labor force for the marketplace. Pressure is upon us to return to teaching the basics (Wadsworth, 1997). Others see that the new information technology is all that is needed to cure the ills of today's schools. "Wire every school" is the cry and all the problems of education will disappear (Rhodes, 1996).

> Computer-based technologies can administer individualized lesson sequences that branch and remediate according to students unique needs, quickly and automatically track progress, perform data analysis, and generate reports. Other computer-based tools enable teachers to quickly generate individualized communications to parents, create lesson plans, and select instructional materials from a rich resource database. If entire schools or districts use such capabilities, record keeping and communication can be dramatically enhanced. (Peck & Dorricott, 1994, p. 14)

This optimistic hype reminds me of the story when electricity first lit up the shop windows in New York, in 1886. The effect on the public was amazing. "So powerful was the new medium that scientists and engineers of the day predicted that its widespread use would make cities green, heal the breach between the classes, create a wealth of new goods, extend day into night, cure age-old diseases, and bring peace and harmony to the world." (Rifkin 1995, p. 43) Awesome and interesting rhetoric, but not many of those predictions have been realized. We do live in interesting times and there are a variety of views of heaven and hell!

A careful reading of the literature suggests to me that four major factors will impact upon us as we continue our path of living and learning in the global village. These I have chosen to characterize as the four C's: collaborative critical literacy, connectivity, creating a civil society, and critical multiculturalism. Together these can form the foundation of a new educational age which fosters equity, growth and social justice for all. These also represent an optimistic view of a desirable future for education. Each has serious implications for children, for schools and for teacher-librarians and indeed, for our survival as a democratic society.

COLLABORATIVE CRITICAL LITERACY

Jim Cummins and Denis Sayers in their *book Brave new schools: Challenging cultural illiteracy through global learning networks* (1995), describe three different types of literacies. Functional literacy "implies a level of reading and writing that enables people to function adequately in social and employment situations typical of late twentieth century industrialized countries." (1995, p. 88) Functional literacy is what the Organization for Economic Cooperation and Development (OECD), the Conference Board of Canada, the chambers of commerce in most communities, and neo-conservatives in all jurisdictions, support as the *raison d'etre* of schools. In other words, give our kids enough basic skills to survive in the workplace so that they can become productive citizens, consumers, taxpayers and voters in order to support the status quo. You will find pronouncements of the importance of functional literacy embedded within the aims and goals of most ministries, or departments of education throughout the world.

There is a wonderful story that was first told in Aldous Huxley's, *Brave New World* that illustrates what functional literacy is:

> A small boy asleep on his right side, the right arm stuck out, the right hand hanging over the edge of the bed. Through a round grating in the side of a box a voice speaks softly. "The Nile is the longest river in Africa and the second in length of all rivers of the globe. Although falling short of the length of the Mississippi-Missouri, the Nile is at the head of all rivers as regards the length of its basin, which extends through 3 5 degrees of latitude..."

> At breakfast the next morning, "Tommy," someone says, "do you know which is the longest river in Africa?" A shaking of the head. "But don't you remember something that begins: The Nile is the...
>
> "The Nile is the longest river in Africa and the second in length of all the rivers of the globe..." The words come rushing out. "Although falling short of..."
>
> "Well now, which is the longest river in Africa?"
>
> The eyes are blank. "I don't know."
>
> "But the Nile, Tommy."
>
> "The Nile is the longest river in Africa and second..."
>
> "Then which is the longest, Tommy?"
>
> Tommy bursts into tears. "I don't know," he howls.
>
> (As retold in Cummins & Sayers, 1995, p. 3)

The focus on functional literacy is predicated on the notion of the child as an empty vessel into which the teacher pours information. Some know this model as the banking model of education or literacy that only reads the word as opposed to the world (Freire, 1974). We should all be familiar with this model as it is the way most of us experienced schooling. We learned by listening to teachers and reading textbooks. Our curriculum emphasized mastery of skills and concepts organized around discrete subject areas. Most of us were tracked into different learning groups. We were tested on our ability to recall information, rather than on our ability to understand or apply that information in a meaningful way.

Cultural literacy, the second form of literacy "emphasizes the need for shared experiences, knowledge, and expectations in order to comprehend adequately texts, media or patterns of social interaction within particular communities." (Cummins & Sayers, 1995, p. 88) Cultural literacy helps to explain why cricket is so important in certain countries, while baseball thrives in others(why the Superbowl creates so much hype in the United States and the World Cup soccer matches elicit a yawn. Several educational reformers including Mortimer Adler (1982) and E. D. Hirsch (1987) have developed very sophisticated lists of subjects and content that all educated persons should know. A number of American states have latched onto these as frameworks for curriculum reform. The problem with cultural literacy is whose culture is to be legitimized and at whose expense? Hirsch's model, for example, focuses primarily on literary contributions from the United States and Western Europe and marginalizes anything worthwhile from Asia, Africa and Australia. Some critics argue that this approach in fact, supports the notion of monoculturalism. This type of cultural literacy formed the foundation for movements such as communism, Nazism and fascism.

Critical literacy, the deepest form of literacy is defined as "habits of thought, reading, writing and speaking which go beneath surface meaning, first impressions, dominant myths, official pronouncements, traditional clichés, received wisdom and mere opinions, to understand the deep meaning, root causes, social context, ideology, and personal consequences of any action, event, object, process, organization, experience, text, subject matter, policy, mass media, or discourse." (Shor, 1992, p. 129) Critical literacy implies life long learning. It means challenging the status quo and fosters not only developing students' critical awareness and understanding, but also critical autonomy. Critical literacy is what teacher-librarians have been advocating and trying to teach for many years. The teaching of critical information literacy is found within sources such as the Big Six (Skills approach, *Information Power* and other national provincial and local associations' role descriptions for teacher-librarians (Eisenberg & Berkowitz, 1990; American Association of School Librarians and Association for Educational Communications & Technology, 1988).

The focus on collaboration and critical literacy is further reinforced in a very important work by Robert Reich (1991). In *The work of nations: Preparing ourselves for 21st century capitalism*, Reich develops the notion of the importance of what he calls symbolic analysis skills for an economy shifting from high volume to high value production. These skills include:

- Reich develops the notion of the importance of what he calls symbolic analysis skills for an economy shifting from high volume to high value production. These skills include:
- Abstraction(the capacity to order and make meaning of the massive flow of information,

to shape raw data into workable patterns;
- System thinking(the capacity to see the parts in relation to the whole, to see why problems arise;
- Experimental inquiry(the capacity to set up procedures to test and evaluate alternate ideas;
- Collaboration(the capacity to engage in active communication and dialogue to get a variety of perspectives and to create consensus when that is necessary.

Having kids working on projects, defining an issue, carrying out research, interpreting the data and then collaborating in searching for solutions to the problems identified constitutes symbolic analysis. That is strange. I thought that was called the Big Six (Skills Approach. Regardless of what we call it, these kids are developing skills that will help them be competitive in the global economy where a highly skilled workforce is required. The focus on critical inquiry of local and global issues might lead students to become more socially active in their own communities and foster a more authentic relationship between the curriculum and the real life world.

Thus far we have talked about critical literacy. The notion of collaborative critical literacy builds further upon the concept of cooperative program planning and teaching again, something teacher-librarians have been doing for more than 20 years. The collaborative critical literacy model, however, extends beyond cooperative program planning and teaching, and attempts to be transformative by bringing about substantive change by focusing on preparing students for democratic education and the pursuit of social justice. Eight components are incorporated in classrooms oriented toward critical literacy in the social justice classroom. These include having curriculum and classroom practice:

Eight components are incorporated in classrooms oriented toward critical literacy in the social justice classroom. These include having curriculum and classroom practice:

- **Grounded in the lives of students.** All good teaching begins with respect for children, their innate curiosity and their capacity to learn. Students should probe the ways their lives connect to the broader society and are often limited by that society. All good teaching begins with respect for children, their innate curiosity and their capacity to learn. Students should probe the ways their lives connect to the broader society and are often limited by that society.

- **Critical.** Students must learn to pose essential critical questions. Who makes decisions and who is left out? Who benefits and who suffers ? What alternatives can we imagine? Finally, student work must move outside the classroom walls, so that scholastic learning is linked to real world problems.

- **Multicultural, antiracist and pro-justice.** Curriculum must strive to include the lives of those in our society, especially the marginalized and dominated and engage children in a critique of the roots of inequality in curriculum, school structure, and the larger society.

- **Participatory and experiential.** Our classrooms also must provoke students to develop their democratic capacities: to question, to challenge, to make real decisions, to collectively solve problems. Our classrooms also must provoke students to develop their democratic capacities: to question, to challenge, to make real decisions, to collectively solve problems.

- **Hopeful, joyful, kind and visionary.** We need to design activities where students learn to trust and care for each other. Together students and teachers can create a community of conscience. We need to design activities where students learn to trust and care for each other. Together students and teachers can create a community of conscience.

- **Activist.** We want students to see themselves a truth-tellers and change- makers.

- **Academically rigorous.** A social justice classroom equips children not only to change the world but also to maneuver in the one that exists. Critical teaching aims to inspire levels of academic performance far greater than those motivated by grades and test scores. A social justice classroom equips children not only to change the world but also to maneuver in the one that exists. Critical teaching aims to inspire levels of academic performance far greater than those motivated by grades and test scores.

- **Culturally sensitive.** When teachers are teaching children who are different from themselves they must call upon p parents in a collaborative fashion if they are to learn who their students really are. (Bigelow, Christensen, Karp, Miner, & Peterson, 1994, pp. 4-5)

The power of the Internet to allow children to engage in collaborative literacy inquiry with each other, within their schools within their district, province or state, within their country or with other countries is evident.

CONNECTIVITY

The second major theme I would like to address is that of connectivity. Here we are referring not only to the physical and technological but also the social connection within schools and between schools and school districts and the communities which they serve. Our schools continue to operate as extensions of the one room red schoolhouse where teachers are isolated from one another by architecture, timetables and overload (Fullan, 1988; Fullan & Hargreaves, 1991). This isolation has led to increased teacher individualism (part of the reason why teacher librarians have had difficulty in working collaboratively with some teachers) which mitigates against collegiality and cooperative school improvement activities. There is a significant body of research that describes improving schools where teachers worked together more in a collaborative and collegial manner. "It is assumed that improvement in teaching is a collective rather than individual enterprise, and that analysis, evaluation and experimentation in concert with colleagues are conditions under which teachers improve." (Fullan & Hargreaves, 1991, p. 44) Schools of the twenty-first century can only survive if teachers pull together collectively in what Glickman calls a cause beyond oneself where "teachers see themselves as part of the larger enterprise of complementing and working with each other to educate students." (Glickman, 1990, p. 20)

Our schools also are not well connected to the communities which they serve. Schools in the future will have to develop purposeful, productive and authentic relationships with their communities. "Business leaders and school leaders must come to understand that the emergence of the information-based economy is creating a condition where the need for alliances between business and education is even more compelling." (Schlechty, 1990, p. 15) Students learn about the community by direct participation and involvement with it. The relationships between the school home and community must be seamless, understood and internalized, Schools can only be successful when the community supports its efforts. "We must understand the interdependence of the quality of life in our community and the quality of life of our schools." (Negroni 1996, p. 218)

We must be careful how we exploit these relationships with our business communities and pay heed to the concerns raised by Maude Barlow and Heather-Jane Robertson in *Class Warfare* (1994). These authors caution schools to be wary of the business agenda whose intent is to build ideological alliances for the corporate agenda, business' wishing to gain access to new markets (schools now represent one of the largest untapped market shares for business), and business's focus on raising the future workforce. As we reach out and establish new working relationships with the community, we must try to recapture that spirit which created the notion that it takes a whole village to educate a child.

"They used to say that school could teach somebody 80 percent of what they need to learn in their lifetime. Today that figure would probably be more like two percent. Schools need to focus on thinking skills and learning skills because those are what will prepare kids for a world of increasing independency and increasing change." (O'Neil, 1995, pp. 22-23) Developing those skills in an authentic community environment reinforces the notion of a village-based support system for the education of all children.

CREATING A CIVIL SOCIETY

One of the most interesting works to be published in the last few years is a book by Jeremy Rifkin (1995), entitled *The end of work: The decline of the global labour force and the dawn of the post-market era*. In this work and others like it, strong arguments are raised about the end of the job as we have come to know it. argues that information age technologies are replacing human beings in every industry. He predicts that over the next quarter century we will see the virtual elimination of blue collar, mass assembly-line workers from the production process. In the 1800's more than 80 percent of our nation's workforce was engaged in agriculture; in 1996, only 1.9 percent remained. Futurists are predicting that by the year 2020 less than 2 percent of the global workforce will be engaged in manufacturing (Rifkin, 1995). We are already seeing the impact. In 1973, 16 percent of the population in the 18-24 year old range lived at home because they could not afford to support themselves independently; in 1994, that number had risen to 41 percent. Not only are we losing jobs, but the jobs that are being created in the service sector are the low paying ones. Almost one third of all workers hold temporary or part-time jobs. If present trends continue, by the year 2000, half of Canadians win be contingency workers (Barlow & Robertson, 1994, p. 70). The myth that big business is creating highly skilled jobs is not backed up anywhere (p. 69). Rifkin (1997) suggests that since jobs in the first sector—the marketplace—are being eliminated and the government—the second sector—is downsizing, the third sector—the non profit sector or non governmental organizations—may be the best hope for creating new kinds of employment. His suggestions have major implications for the very purpose of education. Instead of preparing children for the marketplace and sustaining the status quo, Rifkin supports the notion of investing in a renewed commitment to the improvement of the country. This renewal creates what Rifkin calls social capital, which is based on the notion of freely giving of one's time, energy, talent and skills to help others and advance the interests of the community. By doing so each individual's own interests are optimized. Preparing students to live in a civil society would involve major curriculum changes which would focus on democracy in action. Such a curriculum might include extensions of cooperative work experiences and credit assigned for voluntary contributions.

> At a time when teachers, parents and communities are concerned about the growing alienation, detachment, and aimlessness of students civil education engenders a sense of personal responsibility and accountability, fosters self esteem and leadership, and most of all, allows empathy to grow. (p. 33)

If we are concerned about declining levels of voter participation and public apathy, and kids opting out of society generally, what Rifkin proposes makes a lot of sense. The future of our society will depend on the values and decisions that these people will make in the future. Civil education can restore the notion that it takes a whole village to educate a child.

CRITICAL MULTICULTURALISM

Thus far we have talked about collaborative critical literacy, connectivity, and creating a civil society let us now turn to the fourth factor which impacts on living and learning in the global village. The defining attribute of the information age is to shrink the world so that for the first time in history we can speak of a global community. "Perhaps the major challenge for us individuals and a global society is learning how to work together across cultural and linguistic differences in ways that generate empowerment for all participants." (Cummins & Sayers, 1995, p. 166)

Governments in the last 20 years have paid increased attention to the notion of multicultural and antiracist education. Several regulations, policies and resource documents have been produced for school use (Ontario Ministry of Education, 1992; Ontario Ministry of Education and Training, 1993). Many of these support including, in both the school environment and curriculum practices and content that reflect the diverse cultural backgrounds represented in a pluralistic society. Others support diversity and promoting awareness and understanding of the various cultural groups and recognizing their intrinsic value and significance. All such documents purport to attempt to correct distortions and remedy emissions and discriminatory conditions and to establish practices and procedures consistent with the goals of equity education.

Just as we described several levels of literacy, we have seen an evolution of multicultural approaches that have moved from the **contributions approach**, focusing on teaching about customs and holidays, to the **additive approach** where concepts, themes, and perspectives are added as units of study to the curriculum. An example of this might be a celebration of Black history week. The third approach is the **transformative approach**, in which the curriculum is changed to view issues and concepts from diverse perspectives. Here, instead of studying just Western civilization we might also look at India, Africa or Japan. We also begin to ask different kinds of questions such as: Whose interest is it that we study what we study? Why is it that certain kinds of knowledge get hidden? (Bigelow, et al. 1994, pp. 19-22) The social action approach is one in which the curriculum and instruction help lead to change outside of schools and students are empowered to bringing upon changes where injustices exist through social action.

Most observers agree that our efforts in multicultural education over the last twenty years have not been successful in providing solutions to the problem of racial inequality in schools, and in fact "the programs and policies, despite their cost, have simply added a new veneer to the outward facade of the structure that continues to disable minority students." (Cummins, 1986, pp. 50-68) Research (McCarthy, 1995) tells us that minority girls and boys are more likely than their white peers to be placed in low or nonacademic tracks, that teachers' encouragement and expectations of academic performance are considerably lower for black and Hispanic students than for white students, that black students have access to fewer instructional opportunities than white students and that ultimately black, Hispanic and Native American youth are more likely to drop out of schools than white youth.

The critical multicultural approach attempts to go beyond traditional approaches to multiculturalism by examining critically how school knowledge is constructed and challenging the privileging of Eurocentric and western perspectives in our curriculum. Critical multiculturalism seeks to promote democratic initiatives in curriculum and pedagogic practices and social relations in schools to increase minority success rates in schools. The curriculum brings the uninstitutionalized experiences of marginalized minorities and working class women and men to the center of the school curriculum. "The notion here is that if you wish to teach about ethnicity and race relations a more comprehensive and deeper understanding is possible if you construct your curriculum from the point of view of the subordinated ethnic groups than if you work from the point of the dominant one." (McCarthy, 1995 p. 42)

> If we invest in the diverse, cultural linguistic and intellectual capital that all students bring to school we can create a highly skilled workforce amply endowed with the capacities for symbolic analysis. This workforce will have far greater ability to create wealth through innovation and manipulation of information than is now the case. As a consequence, it will have greater financial assets, which will spur consumption and further production. Far fewer expenditures will be required on welfare, surveillance and incarceration, saving our societies billions of dollars annually. (Cummins & Sayers, 1995, pp. 170-171)

CONCLUSION

Living and learning in the global village presents us with the opportunity to transform our schools and our society. In this paper I have tried to identify four trends which I see as guidelines for this transformation. I have argued that collaborative critical inquiry changes the nature of knowing from regurgitating and recalling information to defining and posing problems, locating, retrieving, using and communicating information and is essential in the information age. I have suggested that schools and teachers must establish authentic connections with the communities that they serve and form partnerships that together can establish classrooms as places of hope where students, teachers and parents can gain glimpses of a society that is just for all. As the whole nature of work changes and as we move from a market economy, driven by consumption and profit, to one that attends to societal benefit we can indeed create a civil society one based on true social justice. The problems of our schools and in our society will not be resolved until we resolve ways of working together across gender, class and race. It is only when we restructure our curricular our pedagogical approaches and our own attitudes that true equity will be achieved.

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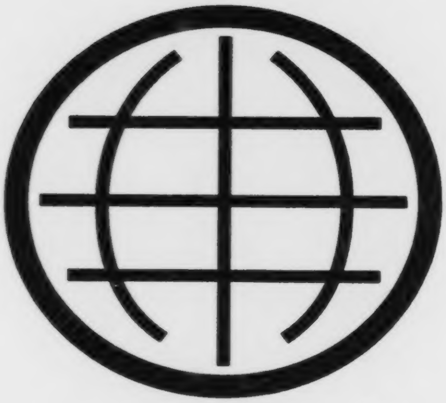
Theme 2

FROM TODAY TO TOMORROW: BRIDGING THE FUTURE



EVOLUTION AND REVOLUTION IN SCHOOL LIBRARY PRACTICE[2]

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ABSTRACT

What future are we as teacher-librarians doing to respond to...or choose for ourselves? Will it be the safe, well-worn "evolutionary" highway on which the majority of school libraries are moving, or will it be the exciting and challenging "revolutionary" path with its associated risks? The revolutionary library signals a new era for schools and their students. Here roles are continually being redefined and services and programs are continually restructure. This paper outlines some strategies for implementing change and challenges and inspires our profession to reinvent itself.

WHY DO WE NEED A REVOLUTION IN THE WAY THE TEACHER-LIBRARIAN OPERATES?

Against a background of the information revolution, in which the amount of information available on any given subject is increasing at an exponential rate; a paradigm shift in pedagogy from teaching students to helping students learn; and information technology making possible unlimited access to information on the Internet, our professional world has changed dramatically in recent years. We now see students accessing whatever they want on the World Wide Web and communicating by e-mail with experts around the globe often without input from their teachers. Information literacy skills will include skills that teachers do not have and have not taught their students. Our expertise in this area is needed more than ever. What future are we as teacher-librarians going to respond to...or choose for ourselves?

THE CURRENT SITUATION IN SCHOOL LIBRARIES

At the present time in school libraries there seem to be three prevailing general scenarios or attitudes:

1. Doom and gloom. This is the worst scenario. Teacher-librarians in this scenario have the underlying attitude that it has all become too hard. They resent the constant demands for change placed upon them by computerized library systems and information technology in a time of cost-cutting; they resent the lack of support in the school for their role, and they are unable to see past the negatives. In their schools the school administration has responded by putting the CD-ROM network and the Internet developments in the hands of the information technologists rather than with the information service professionals. Let us hope these doom-and-gloom teacher-librarians are in the minority.

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2. Evolutionary. A large proportion of school libraries are in an "evolutionary" state at the moment. The teacher-librarians in this scenario have the underlying attitude of comfort with the status quo. These teacher-librarians:

- focus on the daily routine, rather than long-term planning and goal-setting
- have a wait-and-see attitude
- usually have a comfortable profile
- will have some resistance to change amongst their staff
- will implement new services, but will engage in little or no risk-taking
- have a cautionary approach
- can become complacent
- do not acknowledge that paradigm shifts are possible in their organization.

3. Revolutionary. The underlying attitude of the group of teacher-librarians in this scenario is: "this is a new era for libraries with many schools doing wonderful things." Revolutionary libraries and teacher-librarians:

- have shared decisions and a shared vision
- think big and take risks
- are strong leaders
- have a clear mission statement and clearly defined goals
- focus on mission critical practices
- practice "Total Quality Management" which in a library means total quality service
- encourage all staff to develop expertise and a profile
- are continually redefining roles
- provide varied opportunities for staff training and development
- value and reward competencies, not degrees—they foster the concept of a learning organization
- reengineer traditional library practices
- compete successfully for resources within the parent organization
- are used for bench-marking by other school libraries....and
- choose their own future. This is the fundamental difference between evolutionary and revolutionary teacher-librarians.

ACHIEVING REVOLUTION AT METHODIST LADIES' COLLEGE

When I was appointed to Methodist Ladies' College (MLC) in 1993, my brief was to take The Walton Library into the 21st century. Some heady strategic planning was obviously in order. MLC is a day and boarding school for over 2200 students from kindergarten to Year 12. The educational philosophy of the school is one that encourages active, self-directed learning, where students and teachers are learning together. The library needed to be brought into line with this philosophy. It was not user-friendly, had some casual, uncommitted and unqualified staff, and had a negative profile which is worse than no profile.

In my position as Director of Library Services I believe in:

- The significance and importance of my role as a teacher-librarian;
- Student-centered independent learning;
- Being people focused and service-centered;
- Always looking for a different way of doing things;
- The power of positiveness;
- My staff and their professional development;
- Having and sharing a vision and having clearly defined goals (because those who do not have goals will be controlled by those who do);
- Results and productivity.

STEPS TO REVOLUTION

The revolutionary process began in 1993 with:

- The employment of professional staff and redefining the roles of those staff who wanted to stay on and be part of the change;
- The development of a mission statement;" *The Walton Library exists to provide a dynamic environment for independent learners, with services and curriculum resources of the highest quality and relevance. It embraces technological change and the promotion of reading and is a leader in Independent School Libraries in Australia."*
- Establishing user-friendly systems;
- Provision of student focused services and a friendly vibrant atmosphere;
- Physical reorganization of all spaces;
- Technology upgrade—the library was now linked to the school network for the first time;
- Getting rid of practices that did not support the mission;
- Marketing, marketing, marketing.

The revolutionary process continued in 1994 as we:

- Established small teams for the functioning of the library. Each team developed an aim and objectives and wrote action plans for each objective;
- Installed a CD-ROM network;
- Established international links for acquisition;
- Focused on new user services and educational initiatives (such as new student cards, self-check, security system, Information Skills Program, Literature Club, Friends of the Library, Library Expo, Literary Dinner, and Professional Development programs for teaching staff).

1994 was the big year for substance and a real enhancement of profile.

In 1995, we:

- Began the reengineering process with outsourcing of cataloguing, resulting in the chance for teacher-librarians to develop new and revolutionary programs;
- Initiated *Visitor's Days*. Other schools and libraries were by now calling regularly for information about our programs, so we instituted a visitor's program;
- Conducted seminars on the Internet for parents;
- Offered an *Information Networker* course for students at lunchtimes and after school.
- Became a professional development provider for teachers. Courses are offered to teachers in search strategies; advanced searching of the library catalogue; using search engines; Home Page development; using e-mail; incorporating the Internet into the curriculum and other professional development as requested;
- Expanded our networked information services with e-mail, Internet access, further development of CD-ROMs and online ordering.

In 1996 the following initiatives were possible because of the decision to out source our cataloguing:

- Production and sale of CD-ROM User Guides;
- Community Access. We opened our doors to members of the public until 9.00 p.m. four nights a week and charged a AUS$60 subscription for 10 weeks. This subscription included unlimited access to the Internet;
- Development of Library Home Page, accessible at http://www.mlckew.edu.au/library/. It contains information on resources and programs offered by the library; a page of hypertext links to education, reference, world news, literature and cool sites. Our home page is maintained by the library staff;
- Start of Information Access program via electronic pathfinder;
- SEARCH pages on the Intranet to assist students using Netscape search engines.

THE CHALLENGE: CHOOSING OUR FUTURE

We cannot expect that others will automatically think our profession is vital and provide resources and support—we have to make our leaders believe that we are the *"star resource of the school"* (as I heard the teacher-librarian described last year at the Learning Environment Technology Australia conference in Adelaide). At this same conference, the 21st century was described as the competitive century, where creativity, individuality and risk-taking will be the most highly valued characteristics of an employee. The challenge is to decide if we want to take the risk of choosing our own future. If we take up this challenge we will need:

- A leader (library director) with the following characteristics: knows his/her own strengths and weaknesses; is good at judging others' abilities; is a good teacher; delegates; can handle it when people dislike him/ her; can share credit and blame equally.
- Library staff (and all teams) with the following personality types: an intuitive to offer ideas and to spot trends; a thinker to carry out procedures and to get things done; a sensitive to provide a sounding board.

We also need to be asking ourselves and our staff:

- What are we doing?
- What should we be doing?
- What should we be doing next?
- What should we not be doing.

We will also need:

- to build credibility by identifying areas of support from within the school; to encourage staff who are committed team members, rather than having the attitude "I just work here";
- to encourage experimentation and risk-taking;
- to build skills across all staff;
- to have a set of beliefs that are identifiable in the form of a mission statement and that are compatible with the mission of the parent organization;
- to value human resources and not allow technology to rule;
- to improve performance through the use of technology;
- to think and act entrepreneurially;
- to market ourselves and our library;
- to be accountable and continuously evaluate our role and performance;
- to be prepared to throw off the old if it is no longer mission critical;
- to aim for and expect the best performance from ourselves and our staff
- to make decisions with "the big picture" in mind...and let's not exhaust ourselves with trivial change!!!

INFORMATION LITERACY: TEACHER'S PERSPECTIVES OF THE INFORMATION PROCESS

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ABSTRACT

Teaching within a student-centered paradigm in an information society means accepting the responsibility of teaching for the acquisition of integrated information habits and fully adaptable lifelong information skills. Information literacy is critical, yet not enough has changed in education to make in an understood part of the pedagogy of the classroom. Australian studies point the way for developing a sense of clarity for practical change.

INTRODUCTION

Without a doubt, all of us, as teachers, are only too aware that being an educator today means operating in an environment of reform. This environment is not just an environment of curriculum reform, but it is also an environment of startling technological reform. In such a context our charter as teacher librarians, and custodians of the library, has been to facilitate the integration of literacy and information skills into the curriculum. This we have been able to do because of our unique combination of professional skills—educator and information professional.

As custodians of the school library we have been quite comfortable with literacy for a what seems a long time. Books are at the heart of literacy and learning. Yet, in another time frame, the general use of school libraries in school education has only really emerged in the last two or three decades, while the general bibliothecal model for education can chart its establishment back as far as the industrial revolution and the invention of the printing press.

A few centuries later it was promotion of literacy and learning strategies and the incorporation of these strategies into the research process which led to a conceptualization of the cognitive and information skills being used.

Articulation of the information skills and the development of information literacy models match the emergence of the technological era and the phenomenal growth in knowledge and resultant information available in the world today.

We know that our students must learn how to access, process, manage and communicate information—if you like—to become architects of information. In our role as teachers and information professionals we already know that if we restructure the curriculum to include the concept of information we will not have to worry about how the technology fits. We know that it is possible for technology to become almost transparent and seamless in the learning process for students and teachers.

Is it too dramatic to say that we are in the throes of a traumatic period of change? Did if people during the print revolution felt traumatized as they were creating history? Who welcomed change vigorously and with urgency?

The question at the heart of our very own period of change can be more easily put into context by some simple observations. When you return to school look about your classrooms and ask yourself: "Has this teacher recognized the need for a shift in the pedagogy of the classroom—driven by technology? If there is an awareness, is he/she managing the change with all the implications that that change carries for information literacy?"

As we look across classrooms in Australia and Canada, where we have had very active programs in place to foster integration of information skills for many years, it is likely that some of us are still seeing poor outcomes and that we will, again, question why it is that there are still so many instances where teaching strategies have been ineffective in fostering information literacy and lifelong learning skills.

INFORMATION LITERACY

Information is a valuable and essential resource in an information society. Thus, developing skills for acquiring and using information are critical activities. If we recognize that effective teaching of higher order cognitive and problem-solving skills cannot be achieved with a naive view of information use and users (Liesener, 1985), then we can easily accept that the taxonomy of the research process for school students is a thinking process requiring skills, strategies and activities which act as blueprints for research and so help to develop powerful, lifelong information skills (Stripling & Pitts, 1988).

In the 1980s and 90s the attempt to define these skills, processes and patterns of learning as "information literacy" serves to highlight the impact of information and technology on education; the importance of effective use of information; the need for well-developed skills for seeking, obtaining and using information; and the requirement for technical and cognitive skills to facilitate the process.

The Information Process (Table 1), from the document *Learning for the future: Developing information services in Australian Schools* (1993) shows quite clearly the multiple aspects of information literacy which must be considered and incorporated into our classroom teaching practice. This model describes an information process as a core activity, with the interactive skills of literacy and critical thinking as integral to the process of collecting, analyzing and organizing information across all learning areas. The model demonstrates that information literacy, and the information process, can provide the conceptual framework for the development of educational models and new curricular concepts for systematically addressing learning in an information-rich society.

EDUCATION IN THE 20TH CENTURY

With such a model of information literacy we are looking at the development of a new paradigm for collaborative education in what is now also a technological environment, which incorporates and promotes literacy, supports both novice and expert understandings of information seeking and information use, and which will be sufficiently advanced to take account of such things as key interface and interaction responses to working with various digital repositories of information. Unless we make information literacy the focus, adaptive hypermedia and technology in all their shapes and forms will only be further passive raw material rather than dynamic tools for creativity, communication, and independent learning.

This change and challenge in education leads us to question the roles and responsibilities of teachers in our schools. Whatever the nature of the discussion, technology figures in some way or other. yet our classrooms should not be driven by technology. Rather, they should be driven by teachers shaping and applying technology in creative and meaningful ways, so that the learning environment develops the individual student's ability to generate and communicate knowledge, thoughts and ideas—using technology as seamlessly as any bibliographic resource. This demands the presence of teachers acting as mediators who offer navigational assistance, support or guidance to learners in order to optimize their learning experiences.

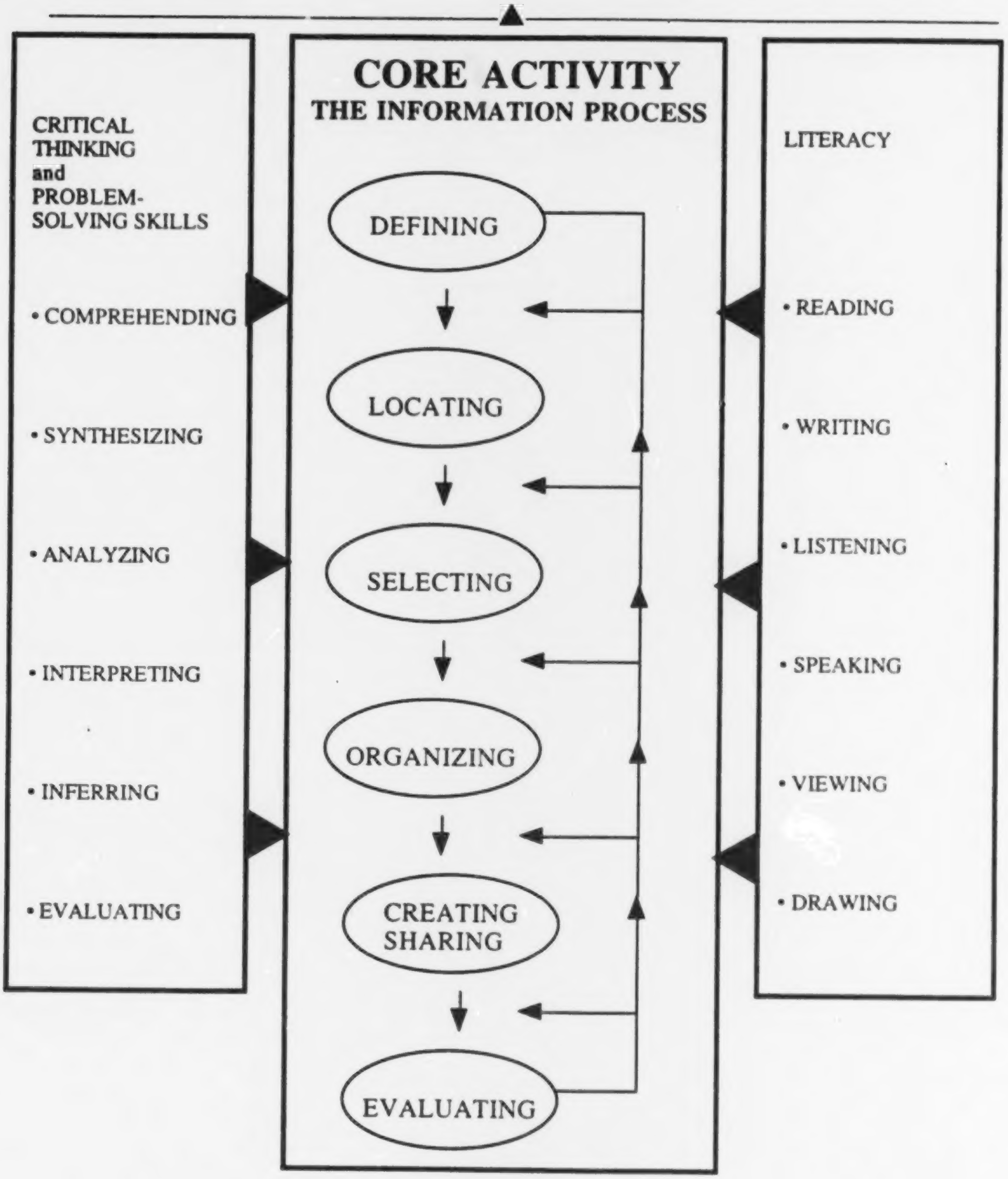
CRITICAL THINKING and PROBLEM-SOLVING SKILLS
• COMPREHENDING
• SYNTHESIZING
• ANALYZING
• INTERPRETING
• INFERRING
• EVALUATING
CORE ACTIVITY
THE INFORMATION PROCESS
DEFINING
LOCATING
SELECTING
ORGANIZING
CREATING SHARING
EVALUATING
LITERACY
• READING
• WRITING
• LISTENING
• SPEAKING
• VIEWING
• DRAWING

Table 1: The Information Process[3]

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[3] ASLA & ALIA, (1993). *Learning for the future: Developing Information services in Australian schools.* Carlton: Curriculum Corporation.

TEACHER'S INFORMATION SKILLS

The work of Carol Kuhlthau (1993) has shown that seeking meaning is a constructive process, and one that uses information as a way of learning and finding meaning (Table 2). Such a constructive process of learning involves individuals in relating new information to what they already know and extending that knowing to form new understandings. She presents a holistic model of the information search process which incorporates three realms common to each stage of the process: the affective (feelings); the cognitive (thoughts); and the physical (actions).

By examining the patterns of experience of those involved in the process of seeking meaning Carol Kuhlthau's work has been able to highlight key areas of concern in the pedagogical problem of developing a multi-faceted information literacy in our school students.

One area of concern identified is the conflict between the students' understanding of their information seeking task and their actual experiences in the process of information seeking.

Another identified area of concern involves the role of the "mediator" as a dynamic part of the information seeking process. The mediator offers process strategies for exploring and formulating in order to enable students to learn how to learn.

If we are willing to acknowledge that the teacher in the classroom must act in the critical role of 'mediator' in the information seeking process, then Rogers (1994) review of research on teaching information skills will begin to ring alarm bells. His review highlights the lack of information skills of teachers which thereby stand in the way of skills acquisition by pupils. What is at the core of the problem is the teacher/student interaction taking place in the learning process.

AUSTRALIAN STUDY

Education today demands classroom teachers who can:

- model good practice in education programs that teach students to become aware of their own process of learning from a wide variety of bibliographic and technological sources of information;
- act effectively as mediator by identifying the zone of intervention for each student or class;
- carry out teaching only in those areas where the student can learn successfully from a variety of sources.

These are the teachers who will assist our students to bridge the gap between the demands of today's and tomorrow's information society.

Before we can integrate fully-fledged information literacy strategies into the mainstream of the educational process in Australian schools and have them become part of the common pedagogy of our teachers, research is telling us that we must first critically examine teachers' perspectives of the information-seeking process. We must more closely examine the relationship of this perspective to classroom expectations. We must recognize and take into account the zone of comfort with the various aspects and stages of the information search process which each teacher has.

When we begin to take these factors into account we are more likely to be able to respond to the causes of conflict outlined by Carol Kuhlthau (1993) relating to student experience and effectiveness of teachers working as mediators.

As part of a whole school review of teaching and learning at Bethlehem College, Ashfield, Australia, a study was designed to explore these issues. In particular, this study sought to examine how a teacher's personal experience of the process of seeking information predicates teaching of the information search process to students.

Table 2: Model of the Information Search Process

STAGES	**Task Initiation**	**Topic Selection**	**Prefocus Exploration**	**Focus Formulation**	**Information Collection**	**Search Closure**	**Starting Writing**
Feelings	uncertainty	optimism	confusion frustration and doubt	clarity	sense of direction/ confidence	relief	satisfaction or dissatisfaction
Thoughts		ambiguity	→	→	specificity		
Actions				increased interest	→		
	seeking relevant information	→	→	→	seeking pertinent information		

Kuhlthau, C.C. (1993). *Seeking meaning: A Process approach to library and information services, Norwood, New Jersey: Ablex*

In essence, if we want our teachers to act successfully as mediators for information literacy and learning, shouldn't we be aware of our teachers' personal perspectives of information literacy and the context for learning they create for their students? How do teachers' perspectives of the information search continuum match or determine phases of information construction expected of students? If we ask teachers to rate their own expertise and zone of comfort within a multi-faceted approach to information seeking, how will this relate to their expectations for their students?

These and many other aspects in the study sought to provide an overview of the dynamic process of teaching in an information literate classroom and the personal perspectives and competencies that modify or empower the process, so as to develop a clearer direction for molding and developing the role of teacher as mediator and dynamic facilitator of the information seeking and learning process.

While there are many externally imposed influences on the interactions taking place in the classroom, it is the significance of teachers' personal perspectives of the information search process and the likely impact of these perspectives on the pedagogy of the classroom for which we should make due allowance. The Bethlehem study included an investigation of teachers' perceived competence with various sources of information and technology alongside their expectations for their students, adding depth to a discussion about education which is becoming more student-centered and increasingly technology-based.

It is the key issues raised by this investigation that provide a valuable focus for discussion and which are offered as points for consideration or for investigation in your own schools.

Discovering Teachers' Perspectives of the Information Search Process

Perceptions are difficult to observe. Personal perceptions of the information process and the way that those perceptions color or influence a teacher's expectations for the information continuum of their students can be even more illusive. Yet they underpin the nature and quality of interactions taking place in the classroom.

Recognizing this, the Bethlehem study drew on the work of Carol Kuhlthau (1993) by adapting her Perceptions Questionnaire as a way of eliciting understandings in this domain. It formed the first part of an extensive survey questionnaire used at Bethlehem College.

Section two of the Teacher Survey questionnaire examined teachers' perceptions of the information literacy continuum for students; teachers' preferences for the information search behavior for students in their classes based on the teachers' perceptions section; investigation of teachers' knowledge and confidence with bibliographic and technological sources of information in comparison with the teachers' sense of relevance and importance of the same source of information for their students.

The third and fourth sections of the survey, though not included here, explored the planning and research strategies used by teachers, including lesson preparation methodology, involvement with collaborative processes, and the professional dimension of education practice such as professional development, preferred or most often used sources of information, and involvement with professional activities such as organization, magazines, conferences, etc..

The validity of the investigation was corroborated by an interview schedule with key Faculty Coordinators in the school. The interviews followed a discussion format designed to explore the personally understood meanings behind key focus questions of the Teacher Survey and to provide an opportunity for hearing individual opinion and personal comment.

Bethlehem Teachers' Mental Model of the Information Search Process

The Perceptions Questionnaire (Section one of the Teacher Survey) provided a construct with which to articulate our teachers' perspectives of the information search process for themselves. By assessing preference in a qualitative way, using a four-point Likert-scale, but by collapsing responses into a match or non-match within the Kuhlthau framework, the survey data was utilized to provide a "snap-shot," or mental model of the information research process, with an immediate evaluation of the caliber of the mental model being expressed by these teachers. The findings offer some challenges for consideration.

Focus formulation. This is central to the information seeking process and integral to the process of knowledge construction. A focus cannot be clear from the beginning but is refined or begins to emerge as part of an information search process. Early in the search information can be confusing, and uncertainty marks the construction process.

Yet, 80.6 percent of the teachers expressed a view that a focus is clear from the beginning of a search, with only 72.2 percent of teachers acknowledging that information is often confusing. While the teachers are aware of the dynamic nature of information seeking, they nevertheless believe that they know what information they want before they begin the information search process and generally do not recognize the sense of uncertainty and confusion that often accompanies the information seeking process.

This finding does, of course, support the Eisenberg and Brown (1992) assertion that all information skills models are largely the same and that clarity is essential early in the task definition stage. However, Kuhlthau's (1993) explanation of the information seeking process, based on a series of longitudinal research studies, has shown that we cannot ignore the affective domain. Her model of the information search process is unusual for acknowledging the sense of uncertainty and confusion that accompanies the research process, including the critical phase of focus formulation. For work in our Australian schools her model clearly makes a distinction between Defining as the first step in the information skills process and Focus formulation as an early phase of the process, operating within both the affective and cognitive domain. We cannot lock our students into a mode where they must define first, before utilizing information, as there is then no scope for the inevitable confusion that comes before clarity.

Sequence. Seeking and using resources involves physical tasks which enhance or hinder the affective and cognitive process of construction and will influence the formulation of the focus. Procedures for gathering information can vary, but the 'sophisticated' researcher will gather and organize information over a period of time from a variety of resources, commonly taking few notes or limited points at the beginning of the information search process (Kuhlthau, 1993). A naive approach to sequence is more likely to be a sign of a confused researcher, an inexperienced researcher, or a researcher in a rush.

The teachers showed themselves to be regular users of libraries, accustomed to the research process. Nevertheless, they exhibited all the signs of a naive approach, with such strategies demonstrated as making comprehensive notes or extensive photocopies to analyze and synthesize later, while also relying on the catalogue to provide access points to all information required. Are our teachers always researchers in a hurry?

Cognitive strategy. The information search process involves cognitive as well as physical actions in selecting information pertinent to a focus. Cognitive organizational strategies (goal setting, strategic planning, monitoring, evaluation and revision) and cognitive learning strategies (knowing how to learn; getting more knowledge in a familiar subject; reconfiguring knowledge already possessed; seeking new knowledge) run parallel to sequencing strategies in the process of construction. The information search process involves using information, not merely locating it. Using information involves interpreting and creating meaning. No matter the amount or the quality of the information gathered, the problem is not solved until the information has been interpreted by the researcher. So, successful cognitive strategies are reflected in increased involvement with the process, while uncertainty in the information search process is reflected in a conservative approach to exploration of a topic.

The questions in the survey used an affective and physical measure as an indicator of the cognitive interactions taking place for teachers. While our teachers demonstrated a sound grasp of the cognitive strategies involved, what we also discovered was that over half (55.6%) of our respondents prefer to stay with the sources of information with which they are comfortable, and will generally confine their search to the same types of information sources. This reflects the naive approach to sequence already commented on.

Search closure. The final stage of the search process culminates in a personalized synthesis of a research problem. There are different reasons for closing a search, revealing an inquiring or pragmatic approach. Diminishing relevance can lead to search closure, while enough information to achieve a purpose (whether or not all relevant information is at hand) may be regarded by some as the more pragmatic approach. In terms of an ideal method of learning, the former can be regarded as the more ideal approach for cognitive interaction with information. Creating new meaning in a research setting implies thorough analysis of existing knowledge.

Though teaching involves deadlines, as do professional studies and research, our teachers showed their academic background, with 74.3 percent favoring a thorough search for information, and 97.2 percent expressing a view that purpose is the deciding factor in search closure.

Mediator. Exploration is a key phase in formulating a focus during the search process. Inherent in the process is 'uncertainty' and the tension between process and product or new meaning, which places mediation as a process intervention into the information search process. Information-related mediation assists with access to information, while process-related mediation assists with learning from the use of information (Kuhlthau, 1993, p.134). The function of mediation is to provide control of sequence, pacing and direction in order to increase motivation and engagement in cognitive reflection and restructuring of knowledge.

Given that teachers deal with information and knowledge on a daily basis as part of their profession, it is useful to examine teachers' perceptions of the role of mediation. The Bethlehem study showed that while teachers like to discuss a research topic with others as a way of developing focus and pursuing their research, they are less likely to explore a topic with someone they believe has some prior knowledge of the focus for research and are even less interested in seeking mediation from a librarian.

These teachers' perspectives of the information search process seem to be one that does not strongly value the mediation available from information professionals. Kuhlthau noted similar disheartening findings in longitudinal studies of students' perception of a minimal role for librarians, and dissatisfaction expressed at the inadequate role that formal mediators played in their search process (Kuhlthau 1993, p. 76).

Sources of anxiety. That there is turmoil and uncertainty associated with the construction of meaning is understood. What we can also recognize is that teachers as a professional group belong to an era of change, with all to some degree or another having had to adapt to new technologies and new methods of accessing and retrieving information. The mounting pressure to know, analyze and decide in such an environment can evidence syndromes of technophobia and information anxiety. During the last decade, computers in the classroom have been followed by CD-ROM, and finally by the Internet.

Not surprisingly, the Bethlehem study showed that the newer the product, the greater the source of anxiety the product became in the information search process. While 61.1 percent were comfortable with computers, only 11.4 percent were comfortable using the Internet.

Generalized feelings and perceived skills. Overall, teachers operate in a professional environment that requires some regular need for information seeking in order to fulfill a personal professional or teaching requirement. Given that this will regularly involve use of library facilities, either at school or within the community, it is interesting to note the effect that interaction in such environments has in the overall affective dimension of their information search process, since these experiences form an intrinsic part of teachers perspectives of the information search process.

Being optimistic about search outcomes and feeling enthusiasm or frustration about interactions are affective skills that are integral to information states, stages and processes. The Bethlehem study indicated that teachers are optimistic when going to the library to carry out research and feel confident that they know how to use a library. They nevertheless find them to be frustrating places.

The relationship of this frustration to lack of confidence with technology would seem an obvious choice. However, frustration could also be the result of the instability and discrepancies already noted in the other phases of the mental model and the fact that teachers do not value the mediation offered by information professionals.

Taking Teachers' Personal Perspectives of Information Literacy Into the Classroom

As teacher librarians we acknowledge that students must be able to reflect on and elaborate their own ideas and those of their peers. The focus is on the student as the self-governed creator of meaning, with teachers acting as facilitator and mediator nurturing active cognitive abilities. An appropriate supportive environment includes traditional sources of information in the form of books, magazines, periodicals, newspapers and journals, audio and video, digital and communication technology in the form of CD-ROM, online information services and databases, interactive audio and video, and hypermedia.

An information skills framework provides the cognitive scaffolding by providing a problem-solving model. Regardless of the framework used, the emphasis is on the recursive nature of the model and the physical, cognitive and affective phases of construction, as mentioned in the comments made about teachers' perspectives of the information search process.

While key concepts and understandings underlie different subject areas, it is the integration of process skills that make learning possible. Stripling (1995) suggests that the mental model of the inquiry (or information search) process of the teacher is central to successful outcomes for students' learning.

Teachers are responsible for creating a learning environment for their students and should be acting as mediators for students involved in the information search process. Teachers are constructing this environment based on their teacher training, teaching experience, professional development experiences, and in discussion with colleagues along the way.

The piece of the equation that we teacher librarians have not taken so much into account is the possibility that these teachers are also constructing this environment based on their own personal perspective of the information search process and construction of meaning, which we find is reflected in their own thinking and behavior in problem-solving and research for themselves.

What is the relationship between this personal construct, and teachers' perspectives of the phases of information construction expected of students?

The Bethlehem study asked teachers to describe their preferences for the information search behavior for students in their classes, and these responses were paired or matched with questions related to their own personal construct.

These are the salient features which this comparison revealed. Overall, these teachers:

- preferred students to begin the information search process with a clear focus in mind ;
- did not acknowledge the uncertainty and confusion which accompanies information seeking;
- preferred that students' took detailed notes, printed or photocopied sources of information;
- preferred that the teacher librarian provide direction in locating material, rather than the teacher;
- expected the computer catalogue to be the main access point for information;
- preferred that students use varied sources of information;
- recognized the important role of mediation offered by teachers, teacher-librarians, parents and others;
- expected students to be more interested in a topic as information is gathered;
- showed a narrow approach to the facilitation of motivation, with one third still relying on a didactic model of information transfer.

An analysis in your own school setting may well come up with a different list of preferred behaviors. However, what the Bethlehem study has shown, is that these teachers' phases of construction in the information search process are strongly reflected in the phases of construction expected of their students. This includes both the strengths and weaknesses in the construct. In the areas where weaknesses in the personal construct do not carry through, such as in the vital role of mediation in the identification and exploration of a research topic, it may be that this is because the general principles of education have overridden the inadequate personal construct, by accepting a student as being a cognitive apprentice and one therefore who does not have the necessary skills to operate successfully alone.

Matching Expectations for a Multi-Faceted Approach to Information Seeking

Given that information seeking is fundamentally a problem-solving and interactive process, it is interesting to consider teachers' perceptions of the place of information and technology in the teaching-learning continuum. Just how do teachers' awareness and confidence with a range of information sources compare to teachers' view of the importance of those same sources for the information needs of their students?

Cross-tabulation of an extensive list of questions related to all things technological (video conference, online, automated catalogues etc.), magazines, newspapers, video programs, and reference and nonfiction books, showed considerable disparity between traditional sources of information, such as videos or dictionaries, compared to newer sources such as Internet or CD-ROM. Whereas a source such as video shows a closer relationship between teachers' perceived level of importance for students and level of personal confidence with technology, newer items may well be perceived as being important for students, even when teachers are insecure or very insecure in the use of the information source.

While this finding may confirm our suspicions, this need not be interpreted as a negative finding. What it does is confirm that the change to use of newer technology is slow to take place. It also confirms that the desire to learn new behavior precedes the change, if we interpret the learning expectations for students as a recognition of a shift and a desire to learn a new behavior.

Electronic digital information seeking is new, and for many, complicated to learn. Skill transfer from traditional sources needs to take place, yet the transfer is not automatic. The Bethlehem study confirms that a multifaceted approach to information seeking is now a part of the agenda for schools and the teaching-learning continuum. However, it also confirms that teachers' expertise and zone of comfort with that approach is not.

IMPLICATIONS FOR PROFESSIONAL PRACTICE

There are many externally imposed influences on the interactions taking place in the classroom. However, our work at Bethlehem College has shown that some formal consideration now also needs to be given to the significance of teachers' personal perspectives of the information search process, and the impact or influence of these perspectives on the pedagogy of the classroom.

Our particular group of teachers showed that they are unclear about the nature and purpose of focus formulation, and its relationship to physical and cognitive stages in the information process. They also showed that the sequence of actions and the recursive nature of information seeking is also not clearly understood.

Exactly where clarity is needed, personal perspectives seem to be confounding the process. Hidden assumptions about teachers' familiarity with the process and their consequent ability to act as mentors is exposed, and shows a clear area for action.

Likewise our teachers exhibited clear zones of comfort and discomfort with use of a wide range of sources of information for their classroom teaching. While they can and do recognize the importance of newer sources, they also acknowledge that they are unable to use the sources well and are unable to model good practice for their students.

Given this scenario, it should not seem unusual to me, as teacher librarian in the school, to find some teachers liking independent lessons in information literacy and separate teaching of information skills isolated from the subject content. If I am surprised it is clearly because my training and my perspective are vastly different from theirs. The outcome is often not to my liking. For example, with this disparity in teacher's mental models comes a focus that is still very much on consolidation of information for end-product marking. If understanding of the stages of the information process is unsound, teachers cannot design effective means for process assessment. Changing this is never straightforward.

The significant implication is that while teachers continue to have a poor understanding of what skills and behaviors are associated with information literacy, the more likely they are to assume that their students are learning information skills somewhere else.

Discussion in the interviews with key Faculty Coordinators strengthened interpretation that disparity is one of the major hurdles that must addressed. For example, while one Faculty Coordinator was able to talk extensively about skills and strategies as part of information literacy and the vital role of teacher as mediator, another Faculty Coordinator, at the other end of the spectrum, could not articulate information skills strategies or methods of integration into the curriculum. For her, a computer epitomized information access and information skills. The faculty leaders alone, demonstrated the range and depth of disparity in classroom pedagogy. What they also demonstrated, unfortunately all too well, was the lack of a whole-school approach to the essential task of developing good practice in education programs, with a cross-curricular approach, and making full use of varied bibliographic and technological sources of information.

The implications for professional development are clear. In fact, most education authorities are active in devising ways to address these needs, particularly in the area of new technology. What is possibly of more concern is the nature of professional development activities. I challenge you to return to your schools and analyze the design of professional inservice or update programs. To what extent do these programs, however valid and seemingly successful, nevertheless offer a set of skills or competencies that are overlaid on what a teacher has been already doing. Though a teacher may wholeheartedly accept a new challenge and embrace a new way of teaching—to what extent is the change impeded by existing personal construct, which has not been articulated, explored, and examined for the disparity it carries?

Is this why, despite years of proactive work by teacher librarians, we still have e-mail listservs that constantly have questions posted to the TL community which essentially ask: "How can I convince, encourage, or get onside my year X classroom teacher to try out information skills"? "What programs have you found successful?" "What strategy worked well?" and so on.

IMPLICATIONS FOR EDUCATION

We know that learning for students needs to be staged so that learners can build the multiple skills required to achieve expert performance and discover the conditions under which they apply. A sound model of the information process provides these learning anchors, within an organizational framework, for the control of sequence, pacing and direction, and to provide motivation and facilitate engagement in cognitive reflection and the restructuring of information and knowledge. In this framework a teacher becomes both expert and peer, working alongside the student as co-learner and co-investigator. To be successful in this role teachers must radiate information literacy. To do this they need a sound mental model of the information seeking process in order to model good practice in education programs and to act effectively as mediator for each student or for the class.

Yet in the process of information seeking for learning, teachers' perspectives of the information search process may indeed have a significant negative impact on the learning of students. Examine these relationships in your school, complex as they may be, in order to minimize any negative impact.

The matter carries a sense of urgency when we consider students' natural processes of learning within complex information environments. While our teachers are mismatched to our students in expertise with technology we are not only losing our ability engage our students beyond mere entertainment or simplistic information gathering, but we are also missing the opportunity to bend technologies to a pedagogical purpose.

What is an even more critical consideration is the fact that integration of technology into the curriculum involves integration of a medium that comes with its own forms of discourse. Students may be beginning to grasp this ahead of teachers. Yet many teachers are insecure and certainly have not had curriculum or education-based training in these fields.

Electronic information environments are changing the way we access and use information and changing the strategies we use to do so successfully. If education is designed to teach students to know how to learn, including in new fields, the ability to seek new knowledge in new fields so as to reconfigure knowledge already possessed must be developed and refined, and embedded in an appropriate mental construct of the information search process.

CONCLUSION

It is time to evaluate and articulate teachers' own mental construct. What do our teachers need to know differently about information literacy in order to facilitate independent learning within the curriculum so as to foster development of lifelong learning skills?

Since teachers are acting as mediators they need to be shown how to use information-related strategies to teach problem solving and learning more effectively. While information professionals may

consider that this is exactly what they have been doing for some years now, a key factor that has been overlooked has been the personal construct or mental model that a teacher brings to the equation. Professional development must be designed to help teachers clarify their personal perspectives and competencies with information seeking and the information search process. Likewise, initiatives related to the introduction of new technologies need to focus not just on the mechanics of information access and possible methods of integration into the classroom, but also on the conceptual demands of information access and communication within these environments.

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THE IMPACT OF A TECHNOLOGY-RICH ENVIRONMENT

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ABSTRACT

The lottery funding for technology in the state of Georgia has reshaped the directions of K-12 schools and redefined education at all levels. The use of technology has improved information access and provided new means for information retrieval.The impact of technology integration on teaching and learning is evident in many of Georgia's schools. The discrepancies in the allocation of state funding across school levels and among regions, however, have widened the gap between the "information rich" and the "information poor."

This paper describes the impact of Georgia's Technology Initiative on information access, teaching, and learning. It will address key issues for creating a technology-rich environment and provides recommendations for technology implementation.

INTRODUCTION

Technology offers new means for teaching and learning. Many public schools are integrating technologies into instruction and information services to equip students and teachers with proficient information access and computer skills and to prepare them to meet the challenge of the information age.

Since 1993, US$ 1.5 billion has been spent on hardware, software, positions, and training in all educational institutions and libraries in the state of Georgia, of which lottery funds have contributed over fifty percent (50%). Technology integration across the state is best manifested by the Georgia Library Learning Online (GALILEO), a system wide online service for shared reference databases, universal material borrowing, and unlimited access. PeachNet, the statewide telecommunications network for education, is the backbone for making GALILEO a reality. GALILEO is an example of using appropriate technology for resource sharing across educational institutions in a University system and for providing global access to information. Today, GALILEO has over 125 reference databases of which 57 are available from OCLC FirstSearch, 18 from GaleNet (Gale Research), 47 from Cambridge Scientific Abstracts, five from UMI (University Microfilms International), and additional ones from Academic Press, Encyclopaedia Britannica Inc., and government agencies (GALILEO, 1997).

The Georgia Statewide Academic and Medical System (G-SAMS), a statewide distance education system, is set up in 370 locations throughout the state (Barry, 1996). It supports course offerings and the broadcast of many instructional programs. Access to Georgia Public Television (GPTV) and the Public Broadcasting System (PBS) also support a variety of instructional programs.

Technology training is provided through nine educational technology training centers established by the Georgia Department of Education. Three of these centers are located in colleges and universities and six in Regional Educational Service Agencies (RESAs). Additional training is provided by host software and hardware vendors and by local schools through in-service and pre-service programs.

This infusion of technology in Georgia's K-12 schools has had a marked impact on information access, teaching, and learning.

IMPACT ON SCHOOLS

A study conducted by Georgia State University's Applied Research Center revealed that the lottery funds have enriched schools with varied technologies. This is evident by the following statistics. In the 1995/1996 school year, forty-nine percent (49%) of schools were equipped with distance learning equipment, compared to fifteen percent (15%) in the 1992-1993 school year (before the lottery funding); forty-one percent (41%) of the classrooms were networked with computers, compared to two percent (2%); over three percent (3.6%) had modems, compared to less than one percent (0.5%); seventy-two percent (72%) were equipped with televisions, compared to sixty-two percent (62%); and eleven percent (11%) had telephone connections, compared to five percent (5%). The study also showed that the number of computers increased from 1.1 per classroom to 2.2, and that all media centers had automated their card catalogs using microcomputer-based automated systems. (Dolan, Jones & Henry, 1996).

In 1996, the percentage of hardware purchases funded by the lottery amounted to thirty-five (35%); the creation of Local and Wide Area Networks (LANs/WANs) by fifty-one (51%), and other technology purchases by seventy-seven (77%). In fact, lottery funds have provided schools with the financial stamina to match local funds, raise donations, and write grants for technology purchases. Schools were required to purchase furniture, rewire buildings, secure additional telephone lines, and provide for peripheral equipment needed to support technology implementation.

Information Access

The heavy use of technology is apparent in media centers, which have become the hub of information where access to online public access catalogs (OPACs), a variety of CD-ROM databases, instructional software, and the Internet is centered. Schools with these resources have enriched media centers' collections and improved information services. Teachers and students can locate a wider variety of resources, are provided with new means of information retrieval, and no longer feel isolated from colleagues and the rest of the world. Indeed, worldwide access to information has broken the isolation barriers, especially in rural areas.

The concentration of technology in media centers has dramatically increased the centers' use and demands on media specialists' time have soared. Besides being the primary person for providing instruction in locating and retrieving information and managing the media center, "The media specialist [in many schools is] the person most likely to identify established school decisions, equipment availability and scheduling, and data resources." (Dolan, Jones, & Henry, 1996, p. 33) The media specialist also became the troubleshooter for technology problems within and outside the school building. These additional tasks have created a challenge and problems for many media specialists who have to constantly keep up-to-date with changing technologies and find the time to participate in training programs to upgrade their knowledge and skills. Despite the creation of the technology specialist position for K-12 schools, many media specialists' responsibilities have converged with those of the technology specialists. This is due, in part, to the roles and responsibilities of the technology specialist which are poorly defined.

In light of the changing roles of the media specialist, the Georgia Committee on Redefining Media Specialists' Roles was created in 1996 by a group of media educators and media specialists. Members of this Committee are in the process of finalizing these roles.

Another use of technology is concentrated in computer laboratories and classrooms. Access to a variety of instructional software packages, word processing, games, reading and writing and other software programs is made available to many networked computer stations located in laboratories and classrooms. Networking these resources has provided teachers with the benefit of integrating their use into instruction without leaving their classrooms.

Teaching

Technology funding has greatly increased the potential of instruction. Teachers are eager to integrate technology into instruction, but they are frustrated because they lack the time needed to participate in technology training, to keep up-to-date with new technology, and to integrate the technology into their instruction. Many teachers are using combinations of voice, video, and data systems on a daily basis. However, others are limiting their use to word processing, drill and practice, or game playing. The discrepancies are due, in part, to differences across the state in the way school systems have embraced technology and supported training. Those schools that provided and continue to provide the facility infrastructure, the training, the staff development support, and technical support that teachers need have seen total integration and successful use by teachers and students. Those schools that lack this support have been less effective. Many school systems in the north Georgia region, for example, have received the highest amount of lottery funds for technology and have contributed a high amount of matching funds on technology expenditures. This resulted in making these systems' laboratories and classrooms better equipped with networked computers, distance learning facilities, televisions, and telephones than those in other regions. In fact, nine out of 21 schools identified as model technology schools across the state are in north Georgia, accounting for 43% of the total number.

Learning

Students are often more motivated than teachers to use the new technology. This is because many students are more computer-literate than their teachers. Students' increased technological skills are preparing them to meet the demands of higher education and the workplace. In fact, the use of computers has renewed student interest and motivation in school. Students learn faster and enjoy helping each other with technology. Many students are visiting the Atlanta Zoo or practicing French with students in France via video conferencing equipment. Many have viewed art exhibits over the Internet or chatted online with archeological experts. However, these types of activities are more likely to be seen in elementary and middle schools than high schools. Most high school students do not obtain sufficient time and lack the training to use available technology. In general, Georgia's high schools have less hardware infrastructure and teachers are less likely to use technology in instruction.

Providing a technology-rich environment is a challenge by itself. It requires commitment of personnel and financial resources, a solid infrastructure, and sound training programs. Indeed, "No state, education experts say, has done more to boost technology offerings in its public schools than Georgia." (Barry, 1996, p. 34) Nevertheless, these offerings have raised many key issues and concerns that need to be addressed.

ISSUES AND CONCERNS

The major barriers to technology innovations in K-12 schools in Georgia concern training, information access, funding, and infrastructure. Although a variety of training programs is available at both the local and state levels, many teachers cannot take advantage of them because they find it difficult to adjust their teaching schedule. In addition, the financial stipend awarded to teachers who attend the training and the reward for their time are insufficient. This is exacerbated with inadequate administrative support for release time from teaching duties. In addition, teachers who are motivated to use the technology are frustrated as they find it hard to keep abreast of the changes in software and hardware.

The many roles and responsibilities assumed by media specialists are interfering with the level of information service they provide to their users. These information professionals are serving not only as information providers and managers of their media centers, but also as trainers for using a variety of technologies, planners for implementing new technologies, and troubleshooters for software and hardware problems.

The fluctuation in state funding for technology has created fear and frustration among school personnel. In 1995, for example, US$25 was appropriated per each full-time school student, compared to

US$2 in 1996. In 1997, the amount rebounded to US$20 (Barry, 1996). This imbalance in appropriations has made planning for new technologies and upgrading existing software and hardware difficult.

The lack of a strong technology infrastructure is evident in many schools. The scarcity of telephone lines, for example, is hampering equal access to information and communication with the outside world. The lack of adequate space has created problems in placing computer stations in appropriate environments, setting up computer laboratories, and making computer stations accessible in classrooms.

Despite these problems, the state of Georgia has gone a long way down a "ten mile road." To overcome current and future technology integration problems, schools should boost and support training, clarify the roles and responsibilities of media specialists and technology specialists, raise additional funds for technology, and maintain a solid infrastructure.

RECOMMENDATIONS

The following recommendations are made for improving the implementation of technology in Georgia's schools. These recommendations may also apply to other schools that are in the process of planning to create a technology-rich environment.

Training

Training is an essential component of technology implementation in any environment. A key to successful training is adequate administrative support and teachers' involvement in planning the training schedule.

Technology training should be evaluated on a continuous basis to assess the level of teachers' acquisition of knowledge and skills, and to gain insights into areas of strengths and weaknesses. Formal and informal evaluation sessions can be scheduled to reach this goal.

Providing immediate technical support is essential for expediting recovery from hardware and software problems so that access is not hampered. Immediacy in solving problems will ease frustration and encourage the continuous use of technology. Each school building should have a knowledgeable and skilled technical support specialist. A teacher with advanced knowledge and skills may be appointed as a liaison for solving minor problems and communicating concerns. When a problem is beyond the liaison's expertise, a technology specialist or technical support staff member is called upon to solve it. Teachers using new technologies may feel intimidated by their lack of knowledge and skills. Having a peer teacher serve as a liaison may help teachers overcome this problem and encourage them to use the technology.

Information Access

Information access is central to the media specialist's role. By having many responsibilities, however, this role cannot be fulfilled effectively. Therefore, redefining the roles of the media specialist in Georgia becomes essential. The document being drafted by members of the Committee on Redefining Media Specialists' Roles should provide a clear description about what media specialists' roles and responsibilities are, and in the meantime, should assist with defining the roles of technology specialists. Troubleshooting hardware and software problems within and outside a school building, for example, should be the responsibility of the technology specialist rather than the media specialist. The role of the media specialist in this area may be confined to the media center rather than the whole building. It is only through role clarification that media specialists will be able to fulfill their roles as information providers, managers, and instructional consultants.

Funding

State funding for technology should be a long-term commitment. Similarly, matching the lottery funds with local funds and with those raised from other sources should continue.

Under-equipped schools should initiate aggressive fund raising programs to bridge the gap between their "information poor" citizens and the "information rich" citizens in model technology schools.

Infrastructure

The backbone for technology implementation is adequate telecommunications, wiring, electrical outlets, telephone lines, modems, and space. With the exception of PeachNet, the state's telecommunications network, most schools suffer from these problems of access to an adequate technology infrastructure.

Updating or replacing existing wires and outlets, increasing the number of telephone lines, acquiring additional modems, redesigning school buildings and/or acquiring new space are necessary for successful implementation of technology. Regardless of the richness in hardware and software, technology integration becomes futile without a solid infrastructure.

If we are committed to equip K-12 students and teachers with proficient information access and computer skills and to prepare them to meet the challenge of the digital revolution, we ought to create a technology-rich environment that is conducive to teaching and learning and that provides equity in education among all students, regardless of grade level or region.

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IT'S THE SAME THE WHOLE WORLD OVER: BRIDGING THE GAP IN NEW ZEALAND

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ABSTRACT

Since 1990, education in New Zealand has undergone dramatic changes. A new K-12 framework has been put in place with the curriculum divided into Essential Learning Areas and Essential Skills Areas. For the first time all students are required to develop information skills yet New Zealand has never had a tradition of full time teacher-librarians. There is now a diploma course for teacher-librarianship but most high school teacher-librarians have only five hours per week in the library. Primary teachers usually have no release time. This paper aims to show how New Zealand teachers and school libraries are facing the challenge and attempting to "Bridge the Gap."

HISTORY OF EDUCATION IN NEW ZEALAND

For teacher-librarians in many parts of the world these are challenging and fast-changing times. Many education systems are having to come to grips with new or revamped curricula, assessment methods are changing, the role of the teacher is changing as learning styles change and the need for Total Quality Management is ever present. There are also funding problems, management restructuring, parents who expect more than ever from the schools, and students who know their rights.

Things are no different in New Zealand. From the 1830s on, European settlers in New Zealand were quick to build schools. The 1877 Education Act laid down that all children should attend primary school. Secondary schools (although there were some, based on English public schools), were not seen as important, and only about ten per cent of children leaving primary school continued on to secondary school. By 1900 there were fourteen high schools throughout New Zealand, but students had to pass a proficiency examination to enter them and even by 1930 only 55 percent of those completing primary school were going on to secondary education. It was not until 1936 when the proficiency exam was abolished that all New Zealand children could enter secondary education, and by 1940 70 percent did so. In 1944 there were more changes when the age for compulsory school attendance was raised to fifteen, a core curriculum was introduced, and the University Entrance examination could be accredited to students who had reached a high enough standard throughout the year. In 1946 the School Certificate examination was introduced.

Tomorrow's Schools and More Changes

The next significant change in the New Zealand education system started in 1988 with the publication of *Tomorrow's Schools: The Reform of Education Administration in New Zealand* which, as stated in the Introduction "...outlines the most thoroughgoing changes to the administration of education in our history...[and] is a statement of the Government's intent." (p. 1) Among these far-reaching reforms were:

- Each school controls of its own educational resources and uses them as it sees fit (within general guidelines set by the state);
- Each school is run by an elected Board of Trustees which appoints the principal and approves other appointments of teaching staff and non-academic support staff on the recommendation of the principal;
- Each school receives a bulk grant to fund all school activities except teachers' pay. (Some schools however are taking part in a trial whereby teachers' pay is also bulkfunded and can be distributed as the Board of Trustees and principal decide fit).

The New Zealand Curriculum Framework, after several drafts, was published in 1993 and sets out the foundation policy for learning and assessment in schools. It identifies seven Essential Learning Areas and eight Essential Skills Areas: "In planning learning programs, schools need to ensure that all students have the opportunity to develop the full range of the essential skills to the best of their ability...[The essential skills] will be developed through the essential learning areas and in different contexts across the curriculum." (p. 17) (see the figure on the following page)

The Significance of These Changes

The contents of this new Curriculum Framework document have enormous implications for education in New Zealand. Not only are schools being organized and managed in different ways but there are and will be vast changes in the ways teachers teach and students learn.

It is the Essential Skills Area that provides the greatest challenges to the New Zealand teacher-librarian or teacher with library responsibility (TLR). Almost 76 percent of the listed skills are actually information skills. Therefore, if a school has an active program of developing information skills across the curriculum which is led and facilitated by the teacher-librarian or TLR, then most of the essential skills (apart from some physical, numeracy and social skills) will be covered. It is significant however that the development of information skills is being monitored by the National Monitoring Program. All the other groups of essential skills are to be developed *within* curriculum areas, but information skills alone are seen as being important enough to warrant this monitoring *across* the curriculum. To implement the Essential Skills Area of the new curriculum, therefore, schools need to have trained teacher-librarians and teachers trained in teaching information skills.

BACKGROUND TO TEACHER-LIBRARIAN TRAINING IN NEW ZEALAND

Until the advent of Tomorrow's Schools 1988 secondary school libraries were administered by a teacher appointed as the TLR. The job was often given to a teacher in the English Department and was not an advertised position. The teacher appointed had no training in managing school libraries, but the position gave the TLR a time allowance of five hours per week for library matters. Since Tomorrow's Schools the five hour time allowance is no longer guaranteed. Principals have discretion to give whatever library release time they feel is sufficient and many TLRs have found their five hours have dwindled to only two or three. Others, especially those who have undertaken teacher-librarianship training as described below, have been able to demonstrate the necessity for, and value of, having more release hours for library and information skills implementation.

Primary school TLRs rarely have any release time for school library management, although there are schools where many staff members have undergone training in teaching information skills.

Teacher Librarian Training

In March 1986 a group of twenty teachers gathered at Wellington Teachers College to begin the first one-year post-graduate diploma course in Teacher-Librarianship. This educational initiative was

The New Zealand Curriculum Framework
Te Anga Marautanga o Aotearoa

All young people in New Zealand have the right to gain, through the state schooling system, a broad balanced education that prepares them for effective participatin in society

The Principles
Nga Mätäpono

The Essential Learning Areas
Nga Tino Wähanga Ako

Language and languages
Te Körero me Nga Reo

Mathematics
Pängarau

Science
Pütaiao

Technology
Hangarau

Social Sciences
Tikanga-ä-iwi

The Arts
Nga Tol

Health and Physical Well-being
Hauora

The Essential Skills
Nga Tino Pükenga
Communication Skills
Numeracy Skills
Information Skills
Problem-solving Skills
Self-management and Competitive Skills
Social and Co-operative Skills
Physical Skills
Work and Study Skills

Attitudes and Values
Nga Waiaro me nga Uara

National curriculum statements specify clear learning outcomes against which students' achievement can be assessed.

instigated by The Minister of Education, the Hon. Russell Marshall, a minister of considerable foresight but unfortunately brief tenure.

The course was devised and directed by Gwen Gawith, who had returned to New Zealand to take up this post from training teacher-librarians in Perth, Australia. The structure of the course was innovative: it involved experienced teachers from all grade levels, junior, middle and senior, and from a broad range of rural and urban schools. It consisted of a number of modules and was an experience-based, hands-on course. Each teacher had class-release for this study year, but remained attached to a base school, spending up to two days per week managing the school library and completing the necessary practical, class-based teaching components of the program. The remainder of the week was spent as a full-time student completing assignment work, undertaking research and preparing materials for the course. In 1986 the school year was organized into three terms of thirteen or fourteen weeks (it has now moved to four terms of ten weeks each). Four weeks of each term were spent with the group together at the newly-established School of teacher-librarianship at Wellington Teachers College, where the underlying philosophical and pedagogical basis for teacher-librarianship and the skills required for it were closely focused upon and there was an opportunity for the sharing of work and experience from the school-based components of the program. In this way the course provided a balance of practical learning and experience in library management, for the honing of skills to promote and develop resource-based learning programs across the curriculum, and individual learning for all those involved.

After the one-year training period the teachers returned to their full-time, permanent positions as Trained Teacher-Librarians. A second group of twenty teachers entered training in 1987 and a third in 1988. However, because of government educational funding cuts at that time, the course was curtailed, and the long-term tenure of the Trained Teacher-Librarian positions was put in doubt. (These full-time positions were maintained until 1994, when it became the prerogative of the individual schools as to whether these positions continued, so long as they fitted within the existing staffing ratios). There was no further national staffing provision made for teacher-librarians and it is not surprising that few positions were maintained.

What a cruel blow for such a forward-looking and valuable adjunct to the teaching and learning processes in our schools! This was especially so because of the positive evaluation in a three-year study undertaken by Geoff Lealand for the New Zealand Council for Educational Research which concluded "...this innovation has been both successful and effective" (Lealand, 1990, p. 89) and spoke of it as having:

> encouraged a wider and more diverse use of resources, introduced different perspectives on teaching and learning, and perhaps most importantly, promoted self-esteem amongst considerable numbers of students, who are now realizing that the acquisition of knowledge through resource-based learning can be both a pleasurable and powerful process. (p. 90)

However, as far as teacher-librarianship training went, all was not lost. The course director, Gwen Gawith, was appointed to redefine the scope and manner of future teacher-librarian training, with the brief to set up a three-year part-time course equivalent to the previous one-year full-time post-graduate diploma. Unfortunately, as there were no specific jobs available for newly-trained Teacher-librarians, the incentive to train as specialists was not great! Yet the inclusion of information skills in the Essential Skills Area of *The New Zealand Curriculum Framework* (1993) provided a means of continuing the growing focus on resource-based learning, and, in fact, a real incentive for teachers to pursue information studies as a means of improving their teaching skills to facilitate the learning of their students.

In 1990 Gwen Gawith was appointed as National Coordinator of the Department of Information Studies and Teacher-librarianship which was based at Auckland College of Education and it was the flexibility of the courses she developed which was to be the key to future success. The Information Studies program, which began in 1991, consists of three related specialist diplomas for trained teachers: the Diploma of Information Studies: the Diploma of Teacher-librarianship: and the Diploma of Information Technology. All of these diplomas have the same core papers, but offer different avenues for specialization. Teachers can choose to do only one or only two papers, or to complete the full diploma over three or four years of part-time study.

The courses offered are all based on distance-learning methods. Centrally coordinated from Auckland, they are offered nationally through the six colleges of education and at several other off-campus sites which may be individual schools. Each site has its own tutor(s) for the sessions (initially from the group of teacher-librarians trained between 1986 and 1988, but more recently they have been assisted by others who have graduated through the part-time course). Sessions run simultaneously at each site and following each two-hour workshop, the centers link for an hour-long teleconference to share feedback and prepare for the next week's school-based practice.

The courses, which run over ten weeks of a school term with a Friday evening -Saturday workshop included, have been enormously successful. They have drawn junior, middle and senior school teachers and the consequent sharing of learning across the levels is unique in New Zealand teacher training and experience.

The base module for all three diplomas is *Infolink*, a six stage framework of information skills, which Gwen Gawith has developed from the British research of Ann Irving , who was among the first to encourage the development of information skills programs which are totally integrated with classroom-based curriculum work. Later, Michael Marland developed a nine step information model with the stages of the information process expressed as questions. Gwen Gawith adapted this to a six-stage model which has been integrated into her programs since 1987.

The modular distance-learning format is supported with study guides, workbooks and audio and video tapes, as well as with substantial audio conferencing to encourage teachers from all over New Zealand to share their classroom-based experiences as an integral part of the learning. Each stage is workshopped in core sessions with the teachers who then implement this learning with their own classes prior to the next session. Through this experiential resource-based model of learning, teachers are provided with first-hand knowledge of how the process of resource-based learning will operate for their own pupils.

Currently, over 600 teachers per year undertake the basic *Infolink* paper of the Information Studies program. In this way the critical mass of teachers who understand and use the process of resource-based learning is growing. The number of teachers who have gone on to complete the Diploma in Teacher-librarianship is minimal in relation to the total, but since 1991 over two hundred have done so—all the more amazing, considering that specialist jobs are no longer likely to be available. Many teachers are making a niche within their own schools as it is realized how effective they can be in improving the quality of student learning. A number have won the support of their principals and have been given class-release time to manage the library and to promote the concept of resource-based learning in cooperative programs across the curriculum. This is in effect teacher-librarianship—although not full-time and not fully recognized—in these particular schools.

The Ministry of Education has not seen fit to support the efforts of concerned schools and boards, or of individual teachers, in best providing for the delivery of the information skills written into *The New Zealand Curriculum Framework*. The teacher training is available to enable New Zealand teachers to handle superbly well the impact of the information age on education. It appears short-sighted not to take full advantage of a program which, by its very nature, offers accessibility throughout the country to trained, experienced teachers with the professional commitment to participate.

The National Library School Library Development Focus Program

A different type of assistance to schools is offered by the National Library School Library Development Focus Program. This program was conducted on a trial basis in 1995. In 1996 165 schools throughout New Zealand joined in with even more applicants for the 1997 slots.

The Focus Program involves a team of staff, with representatives (often heads) from most departments in a secondary school, who work with a Library Adviser/Facilitator over the year to develop a three to five-year school library development plan. The future of the library, therefore, becomes a whole-school activity with everyone able to have input. Teachers can look at the way learning and teaching styles may change once the new curriculum statements are fully implemented and can plan accordingly. The place the Library/Information Resource Centre will play in a particular school, and the ways in which information will be managed, accessed and used to support the school's learning programs, are fully discussed.

As well as helping with the planning, the adviser concerned assists with policy development, arranges visits to other libraries so that staff can see how, for example, information technology can be used, and helps staff to look at the planned development of information skills in their schools. Very often members of a school staff, and in some cases the whole staff, will enroll in Auckland College of Education's Department of Information Studies *Infolink* course.

This National Library initiative has been extremely successful. At a recent meeting several principals were heard praising the Focus Programmme and detailing how invaluable it had been in helping them link their planning for the learning programs of their schools to the planned refurbishing or rebuilding of their school libraries.

One very important advantage, of course, is that taking part in the Focus Programme ensures a central and high profile role for a school library. It also means that staff are able to take a long look at how they want their students to learn in the future and at how they are going to provide for any expected changes. The whole school gets involved, with the library development right at the center where it should be.

PERSONAL EXPERIENCES IN BRIDGING THE GAP

John Fowler, Teacher-Librarian, King's College

King's College is a private Anglican boarding and day school in Auckland, New Zealand. Established in 1886, it celebrated its centenary last year, and is one of New Zealand's oldest and most prestigious schools. It has 869 pupils from Year 8 to 13,* with approximately half being boarding students and half day students. Although known as a boys' school King's was the first school of its type, 18 years ago, to have the good sense to admit girls to its senior levels 12 and 13. There are currently 102 girls on the roll. The school population is mainly of European extraction with only six percent from other nationalities. In its aspirations, King's looks to the great English public schools and aims to foster the best of traditional education—academic, sporting and cultural—while taking full advantage of modern educational developments. King's College is at the forefront of New Zealand schools in its integration of information technology into the curriculum, and it is a feature of the college that it has an open-door policy of welcoming visitors and of sharing its educational knowledge and expertise.

Information Technology at King's College

A King's College trial of the use of computers (both laptop and desktop machines) in several junior classes between 1991 and 1993 was favorably assessed by an independent researcher in 1994. In 1992, as part of this trial, all teaching staff were issued with Apple Powerbook 100s. Although the college retained ownership of these computers, having their "own" computer made a significant contribution to staff professional development and training in the use of computers, which were upgraded to Apple 520c machines in 1996. In 1994 the college campus was networked throughout (all classrooms, offices and boarding houses) with fiber-optic cabling from the new Library and Information Centre, and preparation of a five-year Information Technology Plan was undertaken with an outside consultant. This plan recommended the continued use of the Apple platform and the introduction of compulsory laptop computers for all Year 12 students from 1996 (the Powerbook 150 or 190). In 1997, the second year of this laptop project, there are 400+ students carrying laptops to classes daily. The main software used is ClarisWorks for word processing, spreadsheets and databases, but each department has also developed a range of subject-specific software. Full e-mail communication is available to all staff, and a growing number of students, and the school has an ISDN line to access the Internet —available to all staff via their laptops, and to students via the Library Internet computers and the computer room. The college is currently employing a consultant to assist in preparing its IT 2000 plan. A Network Manager is employed to maintain the network and two computer technicians repair computers under warranty in the Service Centre. Teacher training in the use of computers was initially provided by the Heads of Department, Computing, or by short external courses, but increasingly the seven Technology Coaches (teachers appointed to the various subject departments to assist them with their use of computers and IT) provide the necessary short training sessions or one-on-one coaching to raise the level of expertise. Subject teachers are thus enabled to train their students in the use of subject-specific information technology.

The Teacher-Librarian at King's College

With the development of the new Library and Information Centre at King's College, I was appointed in 1994 as teacher-librarian to manage the library and develop the concept of resource-based learning across the curriculum. I am one of the 1986-trained group of teacher-librarians at and had, since 1987, worked full-time in that role at Long Bay College, a co-educational state school. In my new position as teacher-librarian at King's College I was also responsible for teaching English to two classes. In retrospect, I see this as a positive factor in quickly earning acceptance by both teaching colleagues and students.

To be most effective as teacher-librarian it is vital to have the ear of colleagues in order to know at first hand of any changes in curriculum or methods of assessment—and these are certainly happening in New Zealand! My teaching commitments, however, mean that I am not available to teach in information skills programs in all option lines. There are inevitably some gaps, though over a number of subjects I do get to see all students. I help subject departments plan programs, including research-based work, which will enable the development of the students' information literacy. I see this as a vital consciousness-raising need, all the more so as King's College, prior to 1994, worked students very much in the traditional academic mode. It has therefore been heartening to find enthusiastic support from the college's teachers for enquiry-based learning.

One of the most pressing needs at first was to develop the library as a base for successful resource-based learning. A greater number and much wider range of curriculum-related resources was required with a broader range of reading levels (often the content of library resources was inaccessible to less able students). Our automated catalogue system was networked for staff and student access. An Information File was built up for local and current material. Access was provided to a wide range of CD-ROMs disks through the computer network. Up-to-date encyclopedias were purchased. A document supply service for New Zealand material (Index New Zealand) was subscribed to. Last year we began to provide student access to the Internet for curriculum-related searching. There are now five computers online all day in the library. King's College students have access to a wealth of information—theirs is an information-rich environment.

What is required now are the skills to help turn that information into knowledge. My current (and continuing) emphasis is to focus on the pre-assignment work; to concentrate on the "Deciding" stage of the information process, keeping students away from the resources until they know precisely what they want and need to find out. No matter what their final work is to be students must have a clear understanding of what they need to know—what they need to find out. I have found that class time spent working through this step is essential to the success of the learning. It takes time, but is time well spent.

Even when the presentation format is an academic-style essay, it is beneficial to define the topic in terms of questions which need answers (Why? How? What?). This helps provide a paragraph structure for the essay and, more significantly, helps students keep out irrelevant material which could weaken their presentation. Most of all it helps them to be confident that they are dealing with the topic in an appropriate manner.

King's College students are generally highly computer-literate. They have a wide range of information access options available to them and many are adept at the cut and paste routine, using photocopied notes and CD-ROM and Internet printouts. Increasingly, teachers consider this approach inadequate and are keen to structure assignments to force genuine research and meaningful synthesis of information. The mentality which says "just hand it all in, and let the teacher sort it out," is no longer acceptable and the student has to work harder, but with a greater possibility of real success and ensuing satisfaction.

I would like to see the development of greater confidence by students in their own note-making skills, so that they know they can make sense of information. I would also like to focus more closely on the effective evaluation of independent enquiry-based learning, by the students themselves, their peers and their teachers. This can only foster a clearer awareness of how information serves the needs of the user—can only serve to bridge the gap between the information 'out there' and the requirements of the individual.

PERSONAL EXPERIENCES IN BRIDGING THE GAP

Elizabeth Probert, Teacher-Librarian, Pakuranga College

Pakuranga College is a large state co-educational high school in Auckland with almost 1800 students (ages 13 to 18) this year, up from 1630 in 1996. Students wishing to attend must live within the school zone although over the past couple of years we have taken in a small number of fee-paying students. We have 43 different nationalities represented among our students, 48 percent of whom were not born in New Zealand but come mainly from Taiwan, Hong Kong, Korea and Iraq.

The Teacher-Librarian at Pakuranga College

When I first became TLR I had the usual five hours of release time. During my second year in the job I embarked on the three year Diploma of Teacher-librarianship and quickly began to see that there was no way I could introduce school-wide, across-the-curriculum information skills development on five hours a week. I explained to my very supportive principal what I would like to achieve and the following year I was allotted more hours out of the class room. I was also allotted management units. At the end of last year, after reading a report on how my time was spent and what had been achieved in the library, the principal suggested that perhaps in 1997 I needed to be full time.

However, after much consideration, I have come to the conclusion that there are big advantages in having some time in the classroom. I have noticed that teachers who don't teach often lose credibility with the rest of the staff and can lose touch with the students. I have two English classes and a Year 10 Life Skills class twice a week. Teaching these classes keeps me in touch with curriculum problems, new methods of assessment, and current student thinking. I am part of the staff and not someone seen as having a non-teaching job. As the school runs a House system with vertical grouping I also have a Tutor Group and with it, another opportunity to interact with students.

My teaching load means that I have to plan my teacher-librarian activities very carefully. I have two excellent library staff members, working with me and together we look at the long term and short term goals we set for last year and decide on goals for the coming year. These goals, of course, are founded on the vision statement we wrote for the library when we were a trial school for the National Library Focus Programme and on our Library Policy document.

I was concerned this year when reviewing our goals for 1996 to note how many of them were to do with finding information—that is with helping students know where to look —in which part of a book or periodical, how to search a CD-ROM database and the Internet, or with the training of student librarians to help with library management in order that information can be found.

However, the more I work with students and teachers the more I realize that one of the keys to bridging the gap lies with helping students develop the skills needed to *use* all the information they can now find as well as helping them with the "deciding" and the "finding" stages of the process.

There are many skills involved in using information—skimming and scanning pages, the ability to take notes without rewriting the whole chapter, combining notes from various sources, evaluating both information and sources, synthesizing the information so that it is turned into knowledge, realizing when a question has been answered.

Main 1997 Goal

I therefore decided that this year I would target a specific skill in the "using" stage—note-taking. I chose this particular skill as many teachers feel their students are not able to take notes efficiently. However I also wanted to demonstrate that someone, the teacher-librarian, needs to plan to introduce the skill in all subject areas. I hoped to show that *the planned cross-curricular development* of a certain skill can lead to all students learning, for example, to take notes in a more efficient way which will benefit them in all classes and all subject areas.

I designed a short (four periods) pre-teaching unit (Fig 2) to precede my Year 10 English class's individual English research assignments. All English classes undertake research assignments, with each year's assignment requirements building on the requirements of the previous year. The Form 3 assignment is a show-and-tell presentation. Year 10 students research leisure and present their findings in chart form while Year 11 students write a report (not an essay) on a New Zealand topic and Form 6 students research and present a report (again not an essay) on a language topic.

In the trial pre-teaching unit, students skipped the deciding and finding stages as I provided the questions and the material with which to answer them. In groups, students skimmed, scanned, and took notes, using the "Dot-Jot" method. They then combined these notes, did some thinking and came up with answers to their three questions.

Note Taking

The class learned to take notes using the Dot-Jot (sometimes called bullet point or dash-jot notes) This is an excellent method of notetaking—put a dash or a dot then jot down a point. Students often think note taking is simply rewording the original. It is very hard to get them to see it is acceptable not to have complete sentences.

Each question is written at the top of a fresh sheet of paper. Notes are jotted down on the left hand side and the sources of the notes are written down the right side. (Fig 3)

Progress So Far

I have been really pleased with this unit and at the ease with which students changed the way they took notes. I have also noticed that they seem to have found it easier to combine the notes from various sources in order to answer the questions.

Other teachers who have now taken classes through the procedure are also pleased at the progress their students have made. I have now discussed the procedures with the head of another large department who was delighted to become involved after I showed her what some of her students were starting to accomplish in English classes. I can see that despite the size and complexity of the school we should, with careful planning, be able to have all Year 10 students using this type of note taking.

These, then, are some of ways we are trying to bridge the gap at Pakuranga College. However, I think it is important to realize that:

- developing the skills needed to become information literate takes a long, long time, perhaps many years;
- certain skills need to be targeted for specific practice;
- that such skills will not be developed across the curriculum and throughout all levels unless someone has decided that this will happen and makes plans accordingly.

Then, as the saying goes, "It won't happen overnight but it will happen."

Research
into
Leisure

You are doing this unit as background to your individual research where you will investigate a leisure activity of your choice.
By the end of this unit you should have:

- *a definition of leisure*
- *an understanding of the history of leisure*
- *and understanding of how and why your lives might be different from the lives of other 14 year olds, past or present.*

This unit will also give you practice in ***USING*** *information, i.e. skimming and scanning printed material,* ***note taking****, combining notes from various sources, thinking out your answers, coming to conclusions and presenting them orally to the class.*

You will be working in groups of three or four students and will answer three questions: numbers one and two and one other.

1. *What is leisure?*
2. *How would your life be different if you were living in Britain in the 19th Century as part of a poor family?*
3. *We tend to take the 40 hour week for granted - has it always been in place? If not, why not, and what changes occurred over time?*
4. *What is child labour and how extensive was it last century? Give examples of common working conditions for children.*
5. *How extensive and why is child labour today and how could conditions be improved?*

You group will present their findings on _____________ (date)

Each group is provided with a folder of material form 14 sources which includes information such as

- Ashley's Mines Commission testimony (1842) *(http://www.stg.brown.edu/projects/hypertext/landow/Victorian/history/workers2.html)*
- history of the eight hour day in New Zealand
- material on child labour from various encyclopaedias (print and electronic)
- accounts of child labour *(http://www.earlham.edu/www/polisci/globalprobs/Janet.html)*

Figure 2. Research Assignment: Focus on USING information - note taking techniques.

Dot-Jot Note Taking **Name:** *Jane Smith, 4PRO*

How would my life be different if I was living in Britain in the 19th century and came from a poor family?

Notes	**Sources**
Working in mines • *Sarah Gooder - 8 yrs* • *goes into mine at 4am until 5pm* • *doesn't like being in the pit* • *goes to Sunday School* • *Often works in dark*	*Testimony Gathered by Ashley's Mines commission 1842*
http://www.stg.brown.edu/projects/hypertext/landow/victorian/history/workers2.html	
• *Mary Bennett* • *worked down in min for 5 yrs* • *has 12 brothers and sisters* • *only one can read; none can write* • *no-one went to school* • *doesn't wear any clothes down the mine except ?chemise ?petticoat/singlet???* • *None of the men in pit wear clothes* • *has to work as family needs money*	
child labour • *Many children start work in Industrial Revolution (***get more on this)!!* • *Lots of factories wanted lots of workers* • *children = cheap labour* etc. etc.	*Encyclopaedia Britannica 1990? (check date)!!*

Figure 3. Example of student note-taking

BEST COPY AVAILABLE

CONCLUSION

This has been brief picture of how New Zealand schools are trying to bridge the gap. While many schools have yet to come to grips with the requirements of the Essential Skills Area of our new curriculum, others have already had whole staff training in the teaching of information skills.

It is this development from the ground up that is so exciting and so unusual. While the Ministry of Education put the new curriculum in place, it is teachers, realizing the need for change, who are driving its implementation, especially of the Essential Skills Area. Such activities are indeed helping to lay very strong foundations on which to build these changes in teaching and learning and more and more teachers are able to see the important part that the trained teacher-librarian can play in this process.

School libraries and trained teacher-librarians in New Zealand are destined to play a vitally important and increasingly central role in the education of all students in years to come.

NOTES

* In New Zealand students start school in Year 1 at the age of 5 years. Consequently the final year of high school is Year 13.

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LIBRARY POWER AS A VEHICLE FOR THE EVOLUTION OF CHANGE

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DEDICATION

This paper is dedicated to the memory of Dr. Rebecca Smith, who died on the first day of Spring, 1997. She was a friend, colleague, and mentor, who embodied the quote, "vision with action can change the world." She changed the world of those she touched. May her role as principal serve as an exemplar of leadership in educational reform.

ABSTRACT

This paper reports research based on an ongoing three-year investigation of changes that have taken place in two Library Power schools in a large urban school system in the south-eastern United States.

In the coming year, a new set of national guidelines for school library media specialists will be published (Stripling, 1996a). The document will emphasize the intersection of educational reform efforts and the crucial role of the school library media specialist. Barron and Bergen (1992) have emphasized that school library programs could be one of the most dynamic elements in school restructuring. In the past, school library programs that prepared students to be information literate citizens of the future focused on the following:

> providing in-depth learning experiences; emphasizing thinking and inquiry skills; fostering a community of learners; providing an atmosphere in which students felt safe and successful; helping students create authentic assessment products; making students responsible for their own learning; and teaching through coaching. (Stripling, 1996c, p. 636)

Drafts of the new guidelines (Stripling, 1996a) emphasize constructivist theories of learning (Pitts, 1994, 1995). School libraries of the future will be learning-centered libraries, encouraging students to take responsibility to become lifelong learners who contribute to the learning community. The DeWitt Wallace-Readers Digest Library Power Initiative (see American Association of School Librarians, 1995) has been instrumental in precipitating reform efforts in school libraries.

Educational reform hinges on improving student learning; quality school library media programs are integral to high quality education. The philosophical emphasis of library media programs shifted from an early focus on collection to program to instruction and finally to student-centered learning (Stripling, 1996b). This evolution of thought parallels the philosophical changes that have occurred in systemic reform efforts throughout the country.

National Library Power programs have strengthened the role of the school library media specialist and the school library program. The initiative emphasizes that library media specialists integrate information literacy skills throughout the curriculum. Library Power has attempted to change the perceived role of the media specialist as a "keeper of the books" to that of teaching partner, leader, and advocate for student achievement. In Library Power schools, principals, library media specialists, teachers, students, parents, and the community assume significant roles in the evolution of change.

Educational reform has focused on connecting students with the future, a world in which information literacy skills will be survival skills. Researchers discussed the difficulties school systems experience when implementing systemic change. (see, for example, Fullan, 1996; Saracen, 1996; Zakariya, 1996) Stakeholders often feel burdened with new responsibilities, fragmented and unprepared to meet the challenges, reducing their motivation to participate in reform efforts.

Sarason (1996) indicated that there are interrelated reasons why efforts for systemic reform in schools have met with dissatisfaction. Reformers fail to examine the total picture of the school, which never exists in an encapsulated environment. Reformers have not confronted the concept that school systems are a derivative of our socialization into society and existing culture; "insiders" and "outsiders" paradoxically hold the same views of what is and should be, because they are all products of the same school culture; schools and school systems should be judged with a view of the past; and to understand the psychology of change in schools, one cannot merely focus on the psychology of individuals but must examine the entire system.

Educational systems, because of their inherent nature, are more apt to maintain the status quo rather than to change themselves. In order to achieve systemic reform, strategies must be discovered to motivate large numbers of stakeholders to focus on developing the change. In sum, "you cannot improve student learning for all or most students without improving teacher learning for all or most teachers." (Fullan, 1996, p. 423)

The researchers examined how the Library Power initiative in two schools reflected educational reform efforts at a systemic level. As participant observers, constant comparisons allowed recording of struggles to achieve Library Power goals and provided valuable insight into the evolutionary process of change. Change takes time; Library Power improves student learning by improving teacher, principal, media specialist, parent, and community learning.

METHOD

National Library Power Program

The National Library Power Program, initiated in 1988, now includes 19 participating sites and over 700 schools throughout the United States. The $45 million initiative, supported by DeWitt Wallace-Reader's Digest Fund, is promoted and directed in collaboration with the American Association of School Librarians (AASL).It was designed to improve the teaching and learning process in elementary and middle schools through improved school library media centers. Participating school districts are required to meet stringent selection criteria, including a commitment to match Library Power dollars spent with local funds, pay for labor costs for library renovations with materials being paid for by the grant, have full time certified library media specialists in each Library Power school, and operate library media centers with a flexible schedules to allow open access to all students. In addition, the $1.2 million, three-year implementation grant awards are administered through a Local Education Fund (LEF), which is designed to act as a bridge from the school district to local, state, and national partners (AASL, 1995; Sadowski, 1994).

Each Library Power site implements the grant in individual ways to achieve the goals of the program. As a vehicle for educational reform through the school library media center, Library Power national goals are:

- to create a national vision and new expectations for public elementary and middle school library programs and to encourage new and innovative uses of the library's physical and human resources;
- to create exemplary models of library media programs that are an integral part of the educational process;

- to strengthen the role of the librarian as a teacher, information specialist and learning facilitator who assists teachers and students in becoming effective users of ideas and information;
- to encourage collaboration among teachers, administrators and librarians that results in significant improvement in teaching and the learning process;
- to demonstrate the significant contributions that library programs can make to school reform and restructuring efforts;
- to encourage the creation of partnerships among leaders in school districts, public libraries, community agencies, business communities, academic institutions, and parent groups to improve and support school library programs. (AASL, 1995)

PARTICIPANTS AND CONTEXT

Access to Participants

Invited by the local Library Power director and the coordinator of media services to join the team as researchers and documentors for the grant, the study was approved through the formal district research proposal agenda to obtain official permission for access to schools and personnel. Participants were volunteers recruited at a monthly meeting of Library Power library media specialists. Although participants were reluctant to participate in a research study because of perceived substantial demands placed on them by grant personnel, the study has progressed uninterrupted through the duration of the three-year grant. In exchange for access to four Library Power schools, the researchers volunteered to participate in workshops and other staff development activities for the district.

Participants and Context

The study began in the fall of 1994 and has continued through the 1996-1997 school year, coinciding with the $1.2 million grant from DeWitt Wallace-Readers Digest Fund. The qualitative study was initially undertaken with four elementary schools out of ten participating in the first year of the three year grant. During the second year, ten additional elementary schools were added to the round one schools. In the third year, ten elementary schools and four middle schools were added to Library Power schools for a total of 34 schools. Two schools were dropped from the study in the second year, resulting from significant changes in personnel from the first to the second year. It was decided that the study would continue with the two round one schools, without adding others to the research project.

The schools are part of a large urban school district in the southeastern United States. (Schools and participants will be identified through pseudonyms to preserve anonymity.) The population of the district of 58,739 students is 90% African American, 6% Caucasian, 2% Hispanic, and 2% other. Martin Luther King, Jr. Elementary School, in a working class neighborhood, has a student population of 577 that is 66% African American, 2% Caucasian, 8% Hispanic, and 24% other. Students qualifying for free lunch and reduced price lunch exceed 87%. During the 1996-1997 school year, there was greater than a 30% change in the student population, with many students moving to different schools and different neighborhoods.

George Washington Carver Elementary School has a student population of 486 that is 59% African American, 37% Caucasian, 1% Hispanic and 3% other. The number of students qualifying for free and reduced price lunch is 54%. Carver Elementary School is located in a middle class neighborhood with a more stable student population than King Elementary School.

The school library media specialists, Mrs. Gerrard at Carver Elementary and Mrs. Decker at King Elementary, are both nearing the end of their professional careers, having contributed more than 30 years of service to the school system. They received initial training as media specialists from library programs in the area. Both have discussed retirement in the near future, with one stating that she remained to see her school through the three-year Library Power Program.

During the time of the study, the library media center and library media programs at Carver and King have undergone dramatic changes. King school has been under constant renovation, with the students, faculty, and staff remaining in the building. King opened its new media center during the 1995-1996 school year, while parts of the school continue to undergo construction. Carver school was moved to an old abandoned high school in the neighborhood during the first two years of the Library Power project, returning to a completely renovated school including a new media center in the fall of 1996.

Both schools have experienced significant changes in technology implementation. The entire school district has been involved in automating media centers with on-line catalogs and circulation systems. The district began with automating high schools, then middle schools, and finally elementary schools. The project has been hampered with old buildings having inadequate wiring and telephone lines to handle the dramatic technological changes. Library media specialists were required to weed collections to prepare for the retrospective conversion of their card catalogs to on-line catalogs. To date, the project is incomplete in Carver and King schools.

Dr. Mary Jones, principal of King school will retire following the 1996-1997 school year, after a professional career exceeding 30 years. The principal of Carver school, Dr. Rebecca Smith, will continue as principal. Both individuals are highly regarded administrators in their schools and throughout the district.

DATA COLLECTION AND ANALYSIS

Data Collection

Data were collected over a three-year period beginning in the fall of 1994, including interviews with key personnel in the Library Power initiative, the coordinator of media services, the local Library Power director, library media specialists, and principals. Field notes included participant observations of interactions among teachers, media specialists, and students, focus group interviews with teachers, notes from meetings, researcher debriefing sessions, and interpretation and reflections on working hypotheses. Additional data included a variety of written documentation including collaborative planning logs and thematic units planned with teachers.

In addition, researchers collected data in the form of a survey instrument focused on collaborative planning activities of media specialists administered in November, 1996 to all Library Power schools and an equal number (30) of randomly selected elementary non-Library Power schools in the same district. All audio tapes of interviews were transcribed, printed out, and sorted to identify categories of concepts to be examined.

General Data Analysis Procedures

Phenomenological inquiry as described by Patton (1990) and Weingand (1993), guided use of observations, interviews, and written documentation to suggest working hypotheses. Continuous data analysis followed the naturalistic procedures outlined by Lincoln and Guba (1985) to allow patterns of behavior and understanding to emerge. As participant observers, the researchers' experiences were integrated with those of our co-researchers, the library media specialists. The depth, intensity, and recursive nature of our research promoted heuristic inquiry (Patton, 1990) into the nature of our experiences. The results of data collection have allowed working hypotheses to emerge and be examined (Glaser & Strauss, 1967) about the nature of change and restructuring of school library media centers.

Originally, research focused on the collaborative planning relationships of media specialists as full members of each curriculum planning team. As hypotheses emerged from data analysis, it became apparent that media specialists played significant roles in change that occurred within the culture of the school. The media specialist, an integral participant in curriculum planning and implementation, could serve as catalyst for change within the school environment. Principals served pivotal roles in their schools, encouraging and providing opportunities for collaboration among teachers and library media specialists.

RESULTS

Developing a Stronger Curricular Role for the Media Specialist

One goal of the Library Power program has been for the media specialist to facilitate teachers and students becoming effective users of ideas and information. Resource-based learning, using a variety of information sources instead of textbooks, prepares students for lifelong learning (Breivik, 1992; Weisburg & Toor, 1995). It involves collaboratively planned interdisciplinary units of instruction, integrating both content and information process skills (Stripling, 1996c). Resource-based learning connects students to real life experiences, heightening the usefulness of information they gather (Glasser, 1992). Because the focus is on student learning, higher order thinking skills are required to deal with complex ideas. Students must locate and evaluate information from a variety of sources and create diverse and shared products (Weisburg & Toor, 1995).

In order to successfully implement resource-based teaching and learning, library collections must be relevant and current. Collections at the four schools initially participating in the Library Power program were dated and unattractive. When media specialists weeded or culled their collections, sometimes as much as 75% of the volumes, it created a dramatic impact on the school. The books were replaced with relevant, attractive volumes that appealed to both children and teachers. Mrs. Gerrard, at Carver Elementary, was also working cooperatively with the public librarian in her area. She regularly sought materials from the public library to supplement her school collection.

Teachers began to see that there were materials that they could use to teach their lessons. It strengthened the collaboration between media specialist and teachers. One teacher at King Elementary commented in a recent interview about the improvement in the school's collection,

> Brand new—books—a variety! More series. Like with fifth grade, we have a theme...and this time we didn't have to go out to the public library to pull the books out ourselves...Also, in making the order she [media specialist] met with us to discuss what we would like to see, what we needed, in the media center...When I first got here we didn't have a lot of materials and now I feel good, as a result of whoever. And the books aren't just out-dated. (personal communication, November 13, 1996)

As part of staff development activities, media specialists and teaching teams participated in collection mapping (Loertscher, 1988) workshops. It gave them a framework to build collections based upon curricular needs of the school. The collaborative process was greatly enhanced through the addition of relevant resources. These findings should provide research support to promote building school resource collections for students; it should be a priority in all schools.

The building of the collection in the school brought with it a respected view of the media specialist. In the past, Mrs. Decker viewed her role as a person who was "keeper of the books." She spent a majority of her time on circulation tasks. Through increasing her role in developing a meaningful collection, teachers began to view her as a respected professional. In the third year of the study, Mrs. Decker reflected,

> Like this morning, I had a teacher...come in, a second grade teacher, and she was just browsing around and she was really excited about the books in the reference section.... So, she said she was going to come in and let her students start doing some research, because I showed her all of the primary reference books that they would want to use. (personal communication, December 2, 1996)

Mrs. Gerrard collaboratively team planned units prior to Library Power. Recently, however, she noted that she has changed the way she collaborates with teachers. Now, her emphasis is to try to encourage teachers to take more ownership of the collaborative process. She does less management in the sessions and encourages teachers to take their own notes. She stated, "...if I look at the objectives...they never leave that first stage. And, it's somebody's role to get them to move to evaluate units. Synthesize and analyze;

I'm trying to work on that." (personal communication, December 2, 1996) She said that she was discreetly trying to get teachers see what things they needed to add to units.

Strengthening the Role of the Principal as Facilitator

"Principals would do more lasting good for schools if they concentrated on building collaborative cultures rather than charging forcefully in with heavy agendas for change." (Fullan, 1992, p. 19) Developing a culture of collaborative relationships within the school is central to Library Power goals. Research (Haycock, 1995; Tallman, 1995) has focused on the role the principal fulfills in developing a collaborative school culture.

Collaboration among teachers and media specialists was a new concept for most participants in the study. Principals held divergent views on the roles they played in their schools to encourage collaborative relationships. Dr. Rebecca Smith viewed Mrs. Gerrard as a full teaching and planning partner within the school. She emphasized from the beginning of the study,

> This is a community. This school is a community that really nurtures me. There may be kind of a dynamic, of mutual support that all the constituencies provide for each other but it's a very energizing place, a place where I think we all feel and derive a lot of support from each other...And it's due to a lot of things, and one thing is that we are really able to use the heterogeneity of this community to create something that is not a competitive environment, which I think would kill us. But one where we all kind of hone our work collectively and not individually. (personal communication, June 15, 1995)

Dr. Mary Jones, in 1995, held the traditional view that leadership meant control and rigorous adherence to high standards. There was little evidence of shared vision among faculty members. In an interview during the first year, she discussed her role as principal:

> I'll just say that I think I am the catalyst for everything that happens in this school. I think I set the tone with the staff by laying out a set of expectations at the beginning of the year, during the year, and then following through in terms of monitoring. (personal communication, June 15, 1995)

In a recent interview with Dr. Jones, researchers noted that her language indicated a more facilitative leadership role. When queried about the kind of administrative support she could give to her school, she responded,

> One of the things that we are really trying to focus on is to have a set time for each grade level to meet with the media specialist to do their collaborative planning. Now, it really is a challenge to try to pull that together. But we are committed to doing that, because when they get together as a team all of them grow as they plan. Because, one person may have a great idea but when you put four people together that one idea can be expanded and broadened. It just gets better and better.... (personal communication, December 2, 1996)

Dr. Jones' language changed from "I" to "we," indicating a more facilitative approach to her leadership role in the school. According to Fullan (1992) principals are blinded by their visions when they feel that they have the vision and everyone must conform to their vision. When principals use proprietary language, it suggests ownership rather than a collective vision.

Mrs. Decker and the teachers noted the difference in the school culture during the three years of Library Power. Mrs. Decker expressed pleasure and exhibited a much stronger sense of motivation, because of Dr. Jones' obvious change to a more facilitative role. She noticed a visible change in Dr. Jones' attitude. "It makes me feel more motivated, more excited and it gave me a little more energy to really go after things and to really get things done and to be involved more with the teachers." (personal communication, December 2, 1996)

Although Carver Elementary was already involved in collaborative relationships at the outset of the study, Dr. Smith expressed that the school team grew dramatically throughout the Library Power program. They were now involved in greater collaborative relationships that included parents, multi-grade level planning with teachers, and the library media specialist. Business partners of the school and public librarians have also been a part of the planning process.

Developing Learning-Centered Libraries

One of the biggest challenges was to examine the ways in which the participant school library media centers met the needs of diverse student populations. In all school reform movements, the challenge is to prepare students to be information literate citizens for the twenty-first century. Research (Haycock, 1995; Lance, 1992) suggested that the media center impacts the learning environment of the school.

The researchers sought ways to improve student learning through the collaborative process engaged in by media specialists and teachers. Future high school graduates will have the ability to use information to acquire knowledge and become independent lifelong learners who contribute responsibly to the learning community (Stripling, 1996c).

> The assignments and research tasks that students engage in are an indicator of the level of thinking encouraged by teachers. Dr. Smith described that her school is moving to incorporate more authentic assessment into the curriculum. It has been difficult to develop rubrics to cover the types of standards of performance. They are encouraging teachers to build in alternative assessments into the collaboratively planned units. The planning sessions are qualitatively different than three years ago. "People have learned, I think, to have conversations with each other without getting stressed out about...this isn't the way I've always taught this..." (personal communication, December 2, 1996) Mrs. Gerrard stated that she is seeing different kinds of assignments "...because those are some things we talked about in the planning sessions...assignments shouldn't just be questions on a sheet of paper." (personal communication, December 2, 1996) Dr. Jones discussed the gradual change in assignments coming from teachers,...especially at the intermediate level, where they will give long-range assignments...that requires some research...that may take a week or longer...because it gets the children more focused in the use of the media center. (personal communication, December 2, 1996)

Developing a School Culture to Sustain Reform

Fullan (1996) posited that systemic reform depends on developing strategies to network and reculture schools. A media specialist can feel isolated in the school environment, because schools often have one media professional with little or no clerical assistance. The Library Power director mandated monthly networking meetings for media specialists, monthly breakfast meetings for principals, and regular staff development activities for school teams.

During the first year of the study, media specialists and principals argued that the monthly meetings placed heavy demands on their already strained time requirements for Library Power. By the third year, meeting requirements eased for principals, however, media specialists and principals noted that the shared experiences were valuable in implementing the goals of the program. When new schools joined the circle of participants, there was exchange of ideas and support for changes that were taking place in their schools. During one morning visit to Carver Elementary, Mrs. Gerrard received three phone calls for assistance in writing mini-grants for Library Power. As a senior respected member of the round one teams, many media specialists relied on her perspectives to help them with Library Power goals. Networking experiences facilitated the reculturing of schools through providing mutual support.

Developing Community Involvement

Sarason (1996) noted that schools do not exist in the encapsulated environment that educational reformers perceive as they try to implement change. Political laws and mandates are the most dramatic forces to apply pressure to schools. The socio-historical environment of the community impacts the schools causing resistance to change.

The National Library Power initiative included the community in reform efforts. From the outset of planning for the grant proposal, diverse stakeholders were included in the local process. At each Library Power school, business partners, parents and the community participated in planning, refurbishment, and implementing the goals of Library Power. The plans for community participation varied among the schools.

During the third year at Carver Elementary School, team planning sessions regularly included parents. The school had strong parental support through volunteer programs and the business partners contributed time and resources to the school.

King Elementary School had different needs. In a working class neighborhood, there were few parent volunteers. However, in a recent interview, Mrs. Decker discussed the long range impact she believed Library Power would have on the school. With a Library Power mini-grant, an outreach program was implemented. The community members were invited to attend classes to help adults earn their general education diplomas (GED's). As many as one hundred students attended classes, including families of English as a second language (ESOL) speakers. Three students recently passed the exams.

At both schools parent resource collections were established in the media center to encourage interest and increased parent involvement. At King Elementary School, parents were invited to learn how to use computers through training provided by Project First, a grant that provided Library Power schools with technical computer assistance. The community involvement at both schools will encourage greater visibility and support for future goals.

IMPLICATIONS

Imbued with inspiration, Barker (Burdenuk, 1993) implored, "Vision without action is merely a dream. Action without vision just passes time. Vision with action can change the world." (p. 24) School reform requires leaders and a simple, clear vision of what can be achieved with a passion for excellence. Vision, a shared vision, is central to the success or failure of educational reform. The principal fosters development of that vision through collaboration for individuality (Brown, 1990, 1993; Fullan, 1992).

Dr. Smith, after the first year of the study, shared her views on becoming a Library Power school. She stated that their vision included everyone from the rookie teachers, to veteran teachers, to custodians and cafeteria staff, all focusing on "excellence in every area." Although the staff was not partial to status quo,

> ...there is always the danger in taking on too many new things that may take us off in different directions, but Library Power has really this year been the glue that brought into a coherent, almost focus, a number of things that we wanted to do better. And, I think the number one thing is the collaboration. (personal communication, June 15, 1995)

The changes (Tallman & Tastad, 1995, 1996) that have been documented during Library Power have not come easily. Resistance to change, even when stakeholders agree on goals, results from the complex nature of schools. Neither administration from the top-down nor the bottom-up will result in systemic reform, however, addressing efforts at the bottom may help to achieve widespread improvements (Fullan, 1996).

The three years of Library Power in the school district have been greeted with applause. The challenge is to institutionalize the changes, creating benefits throughout the district. Extensive staff development opportunities have been provided to non-Library Power schools and additional grants are being solicited by the local education fund to implement systemic reform.

The researchers (Tallman & Tastad, 1995) recommended that increasing control of the program be assumed by the school district's library media coordinator, lessening the outside role of the Library Power director. Researchers (Fullen, 1996; Sarason, 1996) posited that long term success of educational reform is dependent on ownership and personal commitment to ensure change. The greater the collaboration and consensus among stakeholders, the greater the commitment to achieve educational reform (Sarason, 1996).

A significant implication of the study is that higher education must prepare media specialists, teachers, and administrators to be collaborators promoting student learning. Media education programs have taught preservice school library media specialists that collaboration will ensure integration of the media center into the total school. Our research has informed us that collaboration is difficult in a school culture where individuals work in isolation (Haycock, 1995).

The vision of Library Power to increase collaboration among teachers, administrators, media specialists, parents, and the community is a vision of improved student learning. The library media specialist and the school library media program are pivotally situated to serve as a catalysts for reform through facilitating curriculum integration of information literacy skills.

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"NOT EXTINCT!" SCHOOL LIBRARIES FOR LEARNING AND LEADERSHIP

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ABSTRACT

Library Media Center 2000 focuses on school library services, technology, training and advocacy—restructuring information and meeting learning needs: linguistic, cultural, multimedia. Over the last three years, San Francisco library media teachers have engaged in a process of professional development opportunities, networking and communication. In a district that has experienced massive cutbacks in library media services, library media teachers have encouraged and supported each other while learning to use new technologies, and sharing areas of expertise and resources.

BACKGROUND

School and public libraries and librarians when adequately equipped, can be a powerful catalyst in a young persons life, offering an amalgam of attentiveness, encouragement, ideas, hope and knowledge that can help to redirect a life—as many have done in the past. Libraries cannot solve all of the problems that kids have, but they can and do make a tremendous difference. (Mathews, 1996, p. 4)

Barbara Jeffus, school library consultant for the California Department of Education notes that public libraries have been used to take up the slack but, "Public libraries are on a different mission. A school library's job is to support curriculum. A public library can't afford to do what we should be doing in the schools. It's a dilemma; parents complain that public libraries don't have books to do school assignments when schools should have the books." (*California Educator*, 1996, p. 15)

California is ranked 50 out of 50 states for providing school library services. California's ratio of student to public school media specialist is 6,361 to 1. The second worst state is Rhode Island which has a ratio of 1,941 to 1. The public school library has become the endangered species of the California education system. (*California Educator*, 1996, p. 15)

California's school libraries are declining at a time when technological developments and research in academic achievement have underscored their critical importance. Substandard school libraries are detrimental to all students, especially those who are poor, from minority groups or limited in English proficiency.

Stephen D. Krashen (1996) found that many children in California's' schools today have practically no access to books and no quiet comfortable place to read. He further discovered that: "affluent children do well in school at least partly because of the print rich environment they experience outside of school. School should not simply be a test that privileged children pass. The school library can be an equalizer." (pp. 3-4)

San Francisco's school libraries are ill-equipped to meet the challenge of becoming library media centers for three major reasons: (1) lack of staffing, (2) limited and outdated collections, and (3) lack of technology. San Francisco elementary schools have not had librarians for over a decade. Middle schools have been assigned a half-time librarian only. In an 1995 newspaper profile, San Franscisco Unified School District (SFUSD) Superintendent Rojas remarked that librarians were "extinct"!

The absence of professional staff has had an extremely severe impact on collections. Library media teachers possess specialized skills in collection development to meet grade level needs and implement the school's curriculum. Without staffing, no one advocates for purchasing library resources. No one knows which resources are most needed. No one identifies and weeds out outdated or damaged books. Collections become less useful and then gradually much less used.

"Strong, knowledgeable librarians have an impact on the whole school," executive director Kathy Owyang Turner says in explaining the San Francisco Education (Ed) Fund strategy for the Library Media Center 2000 Project. "Well-equipped libraries are one of the most effective and efficient ways to reach students and teachers. Library Media Center 2000 is designed to help our schools leap into the information age."

THE LIBRARY MEDIA CENTER 2000 PROJECT

Since 1979, the San Francisco Education Fund has been dedicated to improving the quality of public education in San Francisco, seeking to improve academic performance in schools by providing leadership and financing for innovation in the classroom. Ed Fund programs encourage teachers and students to take an active part in developing classrooms and schools to be supportive, productive and effective places for children to learn. The Ed Fund brings community resources to schools by building partnerships between educators and the community. During the past 16 years, the Ed Fund has channeled over US$11,000,000 into San Francisco public schools with the support of contributions from corporations, foundations and individuals.

The Library Media Center 2000 Project (LMC 2000) was built on the earlier School Library Project. This three-year effort, concluded in 1989-1990, strengthened whole language and early literacy programs in over 30 elementary schools in the district by purchasing books and organizing author visits to schools.

The primary objective of the LMC 2000 Project was to establish SFUSD school libraries as a critical factor in academic success and the hub of learning at a school. One of the most significant obstacles to widespread development of innovative curriculum is the lack of resources available to the classroom teacher. Other schools across the state and nation have solved this problem by transforming the library and librarian into a partner in curriculum development and classroom teaching. Successful programs take the traditional library and introduce technology (CD-ROMs, online research capabilities, video, etc.) to create a new library media center model.

The LMC 2000 Project strategies included providing professional development to participating SFUSD school librarians, improving the link between school libraries and San Francisco public libraries, and increasing and enhancing the use of technology in school libraries. The Project placed strong emphasis on information technology's increasing role in libraries and the critical services it provides to children who are learning to read, write, and conduct research. Students need to know how to use both print and nonprint resources for research and that is what school librarians teach!

Year One 1994-95

The Library Media Center 2000 Project began in spring 1994 with a planning grant from DeWitt Wallace/Reader's Digest Fund. A core committee of district and Ed Fund staff spent several months researching school libraries with the help of state and national library leaders. As a part of the planning process, site visits were made in California and to outstanding projects in Kansas and Louisiana.

The LMC 2000 Project was established jointly by the Ed Fund and San Francisco Unified School District in a collaborative effort to counter the loss of school libraries and librarians due to budget cuts. It was built on a three year professional development program to transform the District's school libraries. LMC 2000's five major strands of professional development include:

1. Collaborative teaching and planning. Librarians and teachers jointly develop and teach curriculum that implements California's state frameworks for content and teaching. "Perhaps the most important outcome of LMC 2000 is that I believe teachers and students understand that the library is an integral part of the school," says Adelaide Creet, Francisco Middle School. A sixth grade class there recently completed a project on ancient Egypt. The students did excavating work, wrote hieroglyphics, prepared mummies, made drawings, cooked an Egyptian lunch and listened to Verdi's *Aida* as well as viewing parts of *Aida* on a video. Other teachers in the school took their students on a tour to view the work of the sixth grade class.

A program was made out in Egyptian writing. The library was mentioned as a major contributor to this class project.

2. Collection management. From electronic card catalogs to weeding the collection, this area of professional development focused on the library media teacher and emphasized good practices in library management. Judith Hansen, Aptos Middle School says, "The money was immediately spent on books, new books, unlike most of our collection. I was able to check out new books to students, which makes them happy. It makes me happy too...I have dramatically changed the Aptos Library having weeded out about 4000 obsolete books over the past two months. We gained space, a more usable collection and much respect from our users."

3. Information skills. By the end of three years, each school library will develop its curriculum for teaching students how to research and analyze information across print and electronic media.

4. Technology. Prior to the implementation of the LMC 2000 Project, many classroom teachers and some librarians were still working without computers. "The library is one of the best possible places in a school to use technology," says Joanne Leong. "Many librarians went to school before computers were in use. This project helps us catch up! LMC 2000 reinforces the concept of the library media center as the main hub of the school where equal access for all students should be met..."

5. Networking to outside resources. Past collaborative programs sponsored by the Ed Fund have taught the importance of linking school personnel to their counterparts in the broader community. Joanne Leong comments on this essential aspect of LMC 2000: "Support from fellow librarians that provided encouragement, inspiration, practical ideas, a place to discuss the future of the library program at SFUSD, a listening ear, the commitment by Ed Fund personnel has helped unify all of us."

The District contributed over US$400,000 to the LMC 2000 project during the first two years, funding full-time salaries for participating librarians (many of whom were previously employed only half time). With generous gifts from the Mary A. Crocker Trust, the Gap Foundation, the William Gilmore Fund, IBM, and Dewitt Wallace/Reader's Digest Fund, the Ed Fund has provided for monthly training for librarians, a four-day summer institute, and grants to purchase books and materials.

Twenty-eight schools applied in a competitive process. A core of 12 schools was selected for the project. Teams of four, composed of principals, library media teachers, computer teachers and classroom teachers, attended a summer institute in June 1994. In September, librarians traveled to Clovis, California to visit the site of one of the most outstanding library programs in the state.

Year Two 1995-96

During the 1995-96 school year, the LMC 2000 Project grew to 16 schools, aided in part by funds committed by AmeriCorps and IBM. AmeriCorps awarded US $120,000 to the San Francisco Education Fund to bring technology to school libraries as part of Project FIRST. Project FIRST (Fostering Instructional Reform through Service and Technology) shares LMC 2000's program goals—to improve student academic achievement and strengthen the bond between schools and their communities.

AmeriCorps is the result of the National Service Initiative signed into law by President Clinton in September of 1993. It provides the opportunity for community service initiatives across the country for up to two years in urban and rural areas. San Francisco was one of only six sites nationally participating in the AmeriCorps/IBM collaboration. IBM contributed 56 new computers (one for each librarian's own use and at least three in library), additional volunteers, training for AmeriCorps members and funds to purchase software.

Over the summer LMC 2000 librarians volunteered for four days of training in the use of electronic resources, developing library curriculum and preparing for the AmeriCorps members. Librarians praised the annual summer institute for providing time to plan for the year as well as to review and revise goals and priorities. They also appreciated the US $1000 grant from the Ed fund to librarians to underwrite the cost of professional development (travel to conferences) and library materials (books, software). Ann Dalton, Lincoln High School sums it up this way: "The summer institute was a tremendous opportunity to share information, and ideas and to network. The extra LMC 2000 funding helped us to purchase additional books at Lincoln as well as the 'Foolproof' system for our library computers. The stipend for librarians to attend conferences is a major benefit enabling professional librarians to participate with other professionals to share and network ideas and to avail themselves of continuing educational opportunities provided at the conference."

An outstanding success in Year Two was the AmeriCorps work with librarians at sites to integrate technology into the school library. AmeriCorps members worked with librarians on building a technology base in the school library. Each of eight members worked with two schools during the year. Each AmeriCorps member assisted in the development and implementation of a library technology plan that became part of the annual report from each school library to the Ed Fund. AmeriCorps volunteers provided technical support (especially with donated IBM computers) and hands-on demonstrations, tutored student library users, and developed a week-long summer workshop series for teachers. For their part, AmeriCorps volunteers learned first hand the challenges and rewards of working in diverse inner city school libraries.

Year Three 1996-97

In the final year of the LMC 2000 Project, all SFUSD librarians were invited to attend and participate in all staff development activities— the summer institute and monthly meetings and the state library conference (with fee paid for one librarian per school to attend).

At the annual summer institute LMC 2000 librarians facilitated the program. As a group, they established a full year staff development calendar (including meeting dates, topics, school librarian host/facilitator and locations). LMC 2000 goals were reviewed and revised. Discussions included assessment of library media activities as well as on-going networking and collegial support.

San Francisco School Volunteers attended the summer institute and prioritized volunteer support for school libraries with special flyers and outreach efforts.. Some volunteers who work in San Francisco are given release time from their job sites to volunteer in the schools.

All year, school librarians have planned and facilitated the monthly professional meetings. "I think the first meeting we had this school year, with members of district curriculum teams participating was important in that it introduced a line of communication between district resource specialists and the LMC 2000 participants." said Adelaide Creet, Francisco Middle School.

Besides their own monthly meetings, this year school librarians had the opportunity to attend a monthly San Francisco Public Library "book review" committee meeting (with paid release day). San Francisco Public Library has been a staunch supporter of schools and school libraries. They have donated reference materials, provided literacy programs for classes and coordinated the annual summer reading program for all children in San Francisco.

The school librarians especially enjoyed the chance to attend San Francisco Public Library monthly book reviews and the state school library conference. Each monthly meeting agenda included reports on conferences and lists of review titles of merit and provided another means of enhancing communication among the librarians.

Last year most communication originated from the Ed Fund or the district office. Now most librarians have access to e-mail. Librarians now have one e-mail address for all district librarians. This year, meeting notices and updates as well as general networking is usually via e-mail! Many librarians subscribe to LM_NET and CALIBK12. LMC 2000 web site was created this year and linked to the district home page.

LMC 2000 and other libraries in the SFUSD participated—to their benefit—in two other programs in 1996/97.

School librarians in K-12 school libraries were supported by the Connections Project: a document delivery service sponsored by public, institution and university library members of the Greater Bay Area Library Council (including the San Francisco Public Library and the California Academy of Science Research Library). School librarians faxed student requests for articles from periodicals not available at the school library. In return, Connections Project participants faxed up to five requested articles per week to the each school library.

California tax forms feature a School Library Protection Fund "tax check off" through the efforts of The California School Library Association. Each year the funds provide grants to school libraries throughout California. Additionally, data from grant applications is providing up-to-date information on the conditions in California's school libraries. "Best Sellers" is a campaign to increase awareness and support for the School Library Protection Fund and in the long term to strengthen California's school libraries and school library programs. The "Best Sellers" Campaign recruits a dedicated group of spokespeople or "Best Sellers" to advocate the need for strong school libraries as a way to increase/enhance student achievement. SFUSD Superintendent Rojas and San Francisco's Mayor Willie Brown are among California's "Best Sellers."

LOOKING AHEAD

During the last three years, the innovative Ed Fund program, Library Media Center 2000, has provided support for SFUSD school librarians. We have participated in monthly staff development, annual retreats and state-wide conferences, focusing on collaborative teaching, technology and curriculum. We have applied research-based information and activities to our school libraries. We have also shared successes and challenges through collegial networking.

The LMC 2000 Project addressed core needs: staffing, training, and materials with an essential focus on technology and curriculum. Over the three years of the project, school librarians identified the urgent need for continuous advocacy at the local, state and national levels. It is vital that we stress the key importance of libraries to literacy and life long-learning for all students.

In June 1997, the Ed Fund has earmarked funds for a fourth summer institute. LMC 2000 members will plan and coordinate the two-day program.

As a consortium team, LMC 2000 librarians have applied for a state library grant to support staff development as well as a local grant to promote a collaborative initiative for information literacy district wide. In preparing for these grants and the institute, LMC 2000 participants pinpointed three areas of need: (1) to continue and expand professional development opportunities for school librarians, (2) to continue and expand networking and communication, and (3) to develop support for libraries

All District school librarians will attend monthly professional meetings and the annual summer institute as well as one annual state conference on which they will report at a monthly meeting. San Francisco Public Library children's librarians will be invited to attend District school librarians' meetings. And, the school librarians will continue to attend San Francisco Public Library monthly book reviews and take part other activities with SFPL children's librarians. The LMC 2000 e-mail communication begun this year will expand with a newsletter for and about Library Media Center 2000. The newsletter will provide a vehicle to communicate regularly with teachers, set up group codes by subject, and link to good web sites. The LMC 2000 newsletter (in print and electronic formats) will also highlight noteworthy conference information.

During the 1997-98 school year, middle and high school librarians have committed to research, develop and publish standards for information literacy. They will develop a set of competencies for students to learn at each grade level, along with curriculum, applications, interdisciplinary themes including research strategy checklists and charts of research sources. The librarians will publish an information literacy newsletter on the LMC 2000 web site and make it available in print for all district school libraries.

CONCLUSION

The school library is a key, critical instrument for developing strong literacy programs, innovative curriculum, and the methods of teaching information skills. Research supports the premise that student outcomes will improve if school libraries are revitalized.

The San Francisco Ed Fund has highlighted the importance of school librarians with this major three year initiative, the LMC 2000 Project. This very public, very positive validation has supported and unified San Francisco Unified School District school librarians. We are confident in using a variety of technologies for communication and research. We are knowledgeable advocates for quality school library programs that improve literacy, extend the curriculum, and teach information skills. We are actively working to continue and expand the revitalization of school libraries in San Francisco public schools.

And, thanks to LMC 2000, we are able to be full-time librarians!

NOTES

* The quotes from librarians were gathered at monthly meetings and via e-mail. LMC 2000 librarians also offered e-mail feedback and editing comments to this paper.

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OUR PATCH VS. THEIR PATCH: INFORMATION TECHNOLOGY AND LITERACY IN SCHOOLS

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ABSTRACT

The information technology revolution is affecting schools on a broader basis than just libraries. Teachers, administrators and educational technology specialists are all espousing expanded roles to address the new opportunities with the result that responsibilities are beginning to overlap and roles are becoming blurred. In this paper the importance of defining a specific "patch" for the school librarian is stressed and criteria for the development of the "patch" are suggested.

INTRODUCTION

The use of increasingly generalized job profiles is blurring the role of the school librarian, particularly in relation to information technology or the use of computers.

We Know Who We Are

When school librarians meet to discuss emerging issues, such as information technology, we know the backgrounds and capabilities of each other. We have a fairly common understanding of what each of us does. We understand the contribution the school librarian can make. We know that, no matter how radical the discussion or the terms used, we will leave our meeting as school librarians—at least in the sense that we understand that we know who we are.

Do They Know Who We Are?

But when others, educational professionals and those who rely on our services, employers in particular, listen to the school librarians discussing these issues, they are often perplexed by the language used. They can be unsettled by the continual debate and uncertainty as to the future of information technology in education. They can be confused by the role of the librarian in this information age.

Why Is It Important To Define Our Patch?

The role of the school librarian is being challenged by data professionals from many walks of life. This paper explores this issue. If we do not endeavor to define our patch, then those that employ us will not define it for us. When they are challenged by the uncertainties of information technology, they will look to the support of information technology professionals—whoever they may be. This may not include us. Unless school librarians focus on distinguishing themselves in a value-added sense they may disappear from schools.

How do we do it?

How do we define our patch? We may look at what we really do and compare this to what other information professionals do. We might see if we can still distinguish our own patch, based on what we do.

How do we get the message across to others?

Finally, if we can distinguish our patch, we might find a simple means of getting the message across to others. By "others," we mean those that we serve as well as those who will employ us.

EXTERNAL PERCEPTIONS

How Do Others See Us?

This paper is primarily concerned with the way others see us. There have been some radical views presented, particularly in relation to the school library in the future:

presented, particularly in relation to the school library in the future:

- the Library has been demolished and replaced by a cupboard containing a hub of small computing devices;
- the ancient crone, the Librarian, has disappeared forever;
- rotting vegetable matter, the book, has been destroyed;
- a single, digital network encircles the globe. (Perry, 1995)

How Many Of Us Will Disappear?

If this seems too far distant, consider contemporary advertisements from the major daily newspapers in Australia. A selection of six typical advertisements has been examined, illustrating the confusing terminology in this area; key points being summarized below.

Federal Court of Australia - Director, Library and Information Services

- leadership for the Library and Records Management function;
- harnessing technology to effectively support library services, information management and research services;
- budgeting, client services and team building;
- appropriate degree and library qualifications.

HB Technology Manager

- software company, customer service, strong services orientation;
- technology upgrade with ongoing support of new PC-based technology;
- no formal qualifications mentioned.

Burwood CouncilComputer—Information Services Manager

- computer and records management;
- budgeting, managing Council's computer and information systems;
- tertiary qualifications in a computer-related discipline desirable but not essential.

Human Rights and Equal Opportunity Commission—Library and Information Services Manager

- managing the library, information services, human resources; client services;
- future library services, strategies and technologies;
- appropriate degree and library qualifications.

Campbelltown City Council - Library Information Technology Coordinator

- coordinating information technology functions of the Library;
- IT customer services with close liaison with internal Information Technology Services;
- tertiary qualifications preferably in library and information science and/or IT;
- experience in library or information technology;
- customer-focused service;
- experience using and supporting Windows 95 and Microsoft Office;
- experience using an integrated library management system;
- shift work.

Loreto Normanhurst—Information Services Coordinator

- qualifications as a teacher/librarian or in Library Science and /or Information Technology; provide information access;
- develop training programs, have management skills and human resource skills;
- engage with students in learning situations;
- assistant designer of the Information Resources Centre;
- manage the IRC and extended hours;
- report to Deputy Principal Curriculum and work with the IT Coordinator.

Table 1 illustrates some of the problems with the terminology by grouping the position titles under two broad headings, primarily library-focused vs. primarily computer-focused.

LIBRARY FOCUSED	COMPUTER FOCUSED
Co-ordinating Teacher/Librarian	Computer Coordinator
Technology Librarian	Technology Manager Information Technology Manager
Co-ordinator of Library Services Director of Library Services	Computer Information Services Manager
Information Services Manager	Manager of Information Services
Heard of Information Services Head Teacher, Information Services	Information Services Co-ordinator
Information Manager/Librarian	
Director, Library and Information Services	
Director of Information Services	Director of Information Services

Table 1: Terminology of Position Title by Focus

The progression to increasingly generalized titles is immediately obvious. As well, the table shows:

- the words "services" and "information" creep into both lexicons;
- "computer" is replaced by "technology" and "information technology";
- "technology" is replaced by "services," to emphasize not technology-driven;
- "information" and "services" are generalized, with no specific meaning;
- there is a resultant blurring of roles.

A further examination of the advertisements leads to the following observations:

- Different requirements for qualifications in library science and information technology creep into the advertisements, although the jobs are similar. For example, the Loreto job asks for a teacher/librarian *or* library *or* information technology specialist, although the job requires a teaching component;
- The Federal Court and Human Rights Commission require a librarian focused on providing services, and skilled in management and budgeting and the use of IT as a tool for providing these services;
- The Campbelltown City Council wants a librarian, an IT service and support person for software, and a shift worker all rolled into one for AUS$693.80 per week! To whom will the successful applicant report?;

- The Information Services Coordinator position at Loreto used to be the Teacher Librarian. Except for reference teacher/librarian or Library and Information Science, there is no mention of the library in the whole advertisement. What about "harnessing the technology" to provide a good service to the users? What about reading guidance to the bright students and the not-so-bright? What about the team-teaching function? In fact, the terms "team" or "teaching" are not used at all in the advertisement.

In Australia, the school librarian is usually a Head of Department reporting directly to the principal. This job entails reading guidance, resource management and development (i.e., books, videos, kits, maps, pictures, CD-ROMs, newspaper clippings), budgetary control, teaching functions, and service to all clients. There could be a Year 7 boy looking for a "good" book to read, a Year 12 girl wanting a relevant critique of Keats, or a teaching colleague trying to find some information on quality in educational management for a Masters degree. Such requests can occur in the space of three minutes. Information technology has had a fantastic impact on making such service functions easier to achieve. So, out of the confusion, we must ensure that others see us for what we are and what we do.

CLARIFYING OUR ROLE TO OTHERS

If we find it difficult to understand and interpret the foregoing, it is little wonder that others are confused. We need to define *our* patch. We need to do this in a way that is simple and easily understood by others. We need to apply the following criteria for development of our patch— our reason for being:

Unique—we are unique in the school;
Understandable—colleagues must understand what we stand for;
Universally recognizable—colleagues must understand what we do; and
Reflects what we really do—our job description and title must reflect what we really do.

In Australia, the Aboriginal people have a concept of "place." They are not confused as to who they are, where they are going and why. The concept of place is of long-standing importance to mankind. So, we could build on the universal perception of what a library is. It is a "place." Everyone's concept of a library reflects a definable image. The word "library" from the Latin *liber* meaning "book" was defined long before books as we know them were developed. In fact, the original Roman word meant bark, as in tree bark. In 1374, Chaucer used the term library, predating the printing of the Gutenberg Bible by approximately a century. The library as "place" survived that technological revolution.

Perhaps we could do worse than resorting to our traditional labels. Perhaps we should simply call our patch a *library*. At least most people recognize the term and understand it. Perhaps we should simply call ourselves *librarians*. These terms are used universally to denote the type of place we work in and the type of work we do. But we know the work is changing. Let us be clear about our role in this work. Let us look at what we really do!

Table 2 , (drawing from my own experience), includes an analysis of the key functions of the school librarian and the computer specialist. Table 2 illustrates some important points, as follows:

- the key function of the school librarian is to assist teachers to identify, access, evaluate and integrate information resources into their teaching /learning programs (In Australia, school librarians are required to have dual qualifications in librarianship and teaching to provide the appropriate educational support in the classroom.);
- the key function of the computer specialist is to coordinate network administration, mainframe development, systems installations, cabling, records management procedures, and to provide support services to the school;
- the computer specialist acts in a services-provider role for the school;
- there is little overlap, in a functional sense, between the school librarian and the computer specialist;
- It should be possible to define our patch based on what *we* do.

Key Functions	School Librarian	Computer Specialist
Assists teachers to identify, access, evaluate and integrate information resources into their teaching/learning programs.	X	
Provides reading guidance and encourages reading experiences.	X	
Plans, develops, organizes , manages, stores and circulates information resources (books, serials, audiovisual, CD-ROMs) in the school meeting all curriculum needs outcomes.	X	
Trains and assists students and teachers to locate appropriate resources, intra-mural and extra-mural.	X	
Identifies and retrieves of information from resources beyond the school using personal contact, telephone, fax, letter and computers (including Internet).	X	
User specification of library computer systems.	X	X
Administers and coordinates, networks, mainframe development, systems installations, cabling, records management procedures and technologies; provides support services to all school departments in relation to operation and maintenance of computer resources.		X
Coordinates computer resources throughout the school.		X
Initiates, evaluates and specifies future computer systems.		X
Ensures computer users follow regular security procedures.		X

Table 2: Key Functions of the School Librarian and the Computer Specialist

GETTING THE MESSAGE ACROSS

Describing Our Patch To Others

In describing our patch in a way that will be understood by others, school librarians must avoid acronyms, and library-specific terms and statements (jargon). We must carefully state our direction and purpose to avoid merely drifting along to some undefined destination. Otherwise, others will be steering our course for us. In describing our patch to others we must:

- emphasize what we really do in job descriptions and advertisements;
- emphasize what we really do when we meet with others outside our profession e.g. at conferences;
- contribute to school strategy and planning in terms of our real skills;
- develop and publicizing a mission statement.

There is continued debate about what constitutes a vision statement and a mission statement. When developing these statements, the school librarian should look to the statements of the parent body. The vision statement and school philosophy of Barker College are included as Figure 1 by way of example.

Barker College Vision

That Barker College will be recognized as a leading Australian Christian independent school which provides a broadly-based education and encourages young people to strive for excellence.

School Philosophy

Barker College provides education within a caring, ordered Christian family environment:
- where the Christian values and Anglican traditions of the College are maintained;
- where each member of the College community is affirmed, valued and challenged;
- where students and staff are encouraged to strive for excellence in all areas of endeavour to the best of their ability; and
- where young people are prepared for active and responsible participation in the community.

Figure 1: Vision and School Philosophy of Barker College.

The library's mission statement follows from the school's vision statement and has been approved by the Head of Barker College. It includes a concrete, attainable and understandable set of parameters for the library in the context of the overall school vision and philosophy as shown in Figure 2.

Mission of the Barker College Library

The mission of the Barker College Library is to encourage and support the educational programs of Barker College by providing access to recorded knowledge through the acquisition, organization, preservation and interpretation of information appropriate to the needs of the students and staff served by the library at Barker College.

The mission statement reflects what we do in the library:
- we support the educational program;
- we provide access to information for our clients;
- we organize that information for retrieval;
- we obtain and preserve that information for anticipated need;
- we serve both categories of clients, both staff and students.

How we do this is what makes us librarians. We may use the telephone, the fax, the photocopier, the television, and the Internet. We may know someone within our network of contacts—from our area professional meetings, from parents, from our family, from special events—who can help us find exactly what our client needs. Such needs vary from client to client, from classroom to classroom, from school to school.

Figure 2: Mission of Barker College Library

CONCLUSION

The role of the librarian, whether it be in a school, a company, or a government department has not changed. "How we do it" has changed . Librarians must embrace the new methods of accessing information but they must not be subsumed by them. Our role is to add value to the information process to make it relevant. We need to be clear about our role and we need to get the message across to others. We should not be preparing to disappear!

And, on this note, the final word goes to Vint Serf, the "Father of the Internet," speaking in Sydney in early 1997:

> People need much more focused and more organized information. It's fun to go Web-surfing and [search] tools help considerably. But when you are looking for a particular thing, it would be helpful if we had more organized views of content. Right now I am relying on the librarians and their 2,000 years of experience trying to organize information. They were all worried that they would have no jobs to do because computers would take over. I beg to differ: I think we need them now more than we ever did because of the vast quantity of material that needs to be more thoughtfully organized (Tebbut, 1997)

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A REALITY CHECK: THE CHALLENGES OF IMPLEMENTING INFORMATION POWER IN SCHOOL LIBRARY MEDIA PROGRAMS

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ABSTRACT

How well are school library media programs realizing the mission, objectives and challenges set by *Information Power*? Teacher-librarians are struggling to realize its ideals in less than ideal circumstances. To gain a broader understanding of their work and success, this paper studies 48 good library media programs in New England Region, U.S. using a combination of qualitative and quantitative methods to ensure the perceived success of participating programs in conforming to the national guidelines.

INTRODUCTION

The American Association of School Librarians (AASL) and the Association for Educational Communication and Technology (AECT) are reconsidering the national (U.S.) guidelines, *Information Power* (1988). A joint Committee revising the guidelines has chosen to focus on a new vision for the future—learning-centered libraries. The vision will stress learning and the learning community of the whole school , not in isolation, but by emphasizing the roles of the library media specialist in relation to the learning community. School library media specialists will be challenged to weave partnerships, exercise leadership, and advocate for student achievement and information literacy standards appropriate for all areas (Stripling, 1996). Before articulating a new vision, however, one needs first to assess whether school library media programs are presently realizing the mission, goals, and objectives set by *Information Power* . If library media specialists are to be challenged to assume additional responsibilities and roles, the question needs to be asked whether they are fulfilling the current roles of teacher, information specialist, and instructional consultant.

Information Power has posed many challenges for school library media specialists who struggle to realize its ideals in less than ideal circumstances. In performing a reality check on *Information Power* , one needs to address the following questions: Can the goals of *Information Power* be realized in the current culture of schools? How effective have library media specialists been in negotiating change and translating the mission into realizable programs? Have programs become fully staffed and flexibly scheduled? How well are information literacy skills and instructional technology integrated into the whole curriculum? Are library media budgets adequate to support effective programs?

This investigation sets out to answer these questions by assessing the current status of forty-eight library media programs in the New England region (Rhode Island, Massachusetts, Connecticut, New Hampshire, and Maine) of the United States through a comparison and analysis of data, and through drawing inferences. To gain a broader understanding of how well library media specialists translate the mission of *Information Power* into reality, the investigator analyzed data on forty-eight library media programs within their existing school cultures. The methods used were personal observations and a survey of library media specialists and student library media specialist interns. Recommendations and future implications are then offered to help create fully integrated library media programs for the Twenty-first Century where students will achieve information literacy.

THE CULTURE OF SCHOOLS AND EDUCATION REFORM

The culture of schools and library media programs interest this investigator as both a researcher and a professional concerned with support for library media programs centered on student learning. In 1992-1993 a task force of library media specialists including this investigator from the Rhode Island Educational Media Association, wrote student learning goals for mastery of information literacy skills in library media programs. Although these goals were praised as exemplary and desirable by Rhode Island's Commissioner of Elementary and Secondary Education, they have not been formally adopted as state standards. Other New England states have also written meaningful goals or standards for their library media programs, but none have been mandated or adopted as state standards. In the absence of National or State standards requiring fully staffed and flexibly scheduled learning-centered programs, the responsibility for leadership and implementation of these goals has been left to the individual library media specialist.

Therefore, it seems that the culture—or learning climate—of the school and how well the library media specialist negotiates his/her roles, has determined the success of each program. Success varies widely depending on the culture of reform in the school and depending on whether a full-time library media specialist exists, has an adequate budget, a variety of resources and technology, and an integrated program of services. Since the (U.S.) National Commission on Excellence in Education [NCEE] issued its report, A Nation at Risk, (1983) schools have responded to its charge that the United States country's education system is "a rising tide of mediocrity that threatens our very future as a nation and a people." (p. 5) In addition, the report asserts that the failure of the education system is threatening the United States' world leadership, our economic competitiveness, and democracy, all of which depend on an educated and literate society. The Commission further called for education reform in both the quantity and quality of curricular content and instruction. The Commission hoped that their report would raise standards and expectations of the nation's educational system as well as improve the quality of teaching and learning (NCEE, 1983).

What have these reform efforts produced? The National Center for Education Statistics (NCES) reports that although high school students are taking more core courses and more rigorous and advanced placement courses, achievement rates have increased only slightly in math and science and have decreased in reading from 1982 to 1992 as measured by the National Assessment of Educational Progress (Smith, 1995). Although statistics indicate that schools have made some curricular improvements, little substantive or systemic change has occurred nationwide. Continued cries for reform tend to center on the need for national standards, assessments, and accountability (Gagnon, 1995; Daedalus, 1996; Fiske, 1992). President Clinton has also called for education reform as the top priority in his State of the Union Address in January 1997.

One example of a successful reform movement seems to be the Coalition of Essential Schools. Theodore Sizer, University Professor Emeritus at Brown University and founding director of the Annenberg Institute for School Reform is Chairman of the Coalition of Essential Schools. He claims that most of the "systemic reform" efforts nationwide have produced little substance; rather, they only served to streamline the education hierarchy and to legislate vague reforms, such as Goals 2000 (1996, pp. 47-48). Instead, he believes that schools should be developing thoughtful intellectual habits to help students learn to use their minds well. Some of the Coalition's reform efforts are not new. Sizer admittedly acknowledges John Dewey as the forerunner of some of the Coalition's ideas (Sizer, 1992). In his latest book, Horace's Hope, Sizer (1996) is confident that meaningful reform is occurring in Coalition of Essential Schools where young people demonstrate their mastery of essential skills and areas of knowledge through exhibitions.

How have school library media programs responded to the call for reform? In recognition of the need to integrate school library media programs into the curriculum of the whole school, AASL and AECT (1988) adopted national guidelines, *Information Power*, calling for a shift in emphasis from media collections to integrated instructional technologies and information skills in the curriculum. *Information*

Power defines the library media specialist's mission as ensuring "that students and staff are effective users of ideas and information." (p. 1) To fulfill this mission, library media specialists are called to perform all three roles of teacher, information specialist, and instructional consultant (pp. 38-39). Library media specialists, however, cannot do it alone. They need partnerships with teachers, administrators, unions, and parents in order to collaborate and to negotiate change in the school culture. Perhaps, library media programs can learn from the success of the Coalition's reform efforts by defining information literacy skills as essential. In addition, information literacy skills need to be adopted as National Standards and integrated throughout the curriculum. Furthermore, library media specialists need a framework for both teaching and assessing students' mastery of information literacy skills and to become accountable for student achievement.

How does one determine whether library media programs are succeeding in translating the mission of *Information Power* into reality? One needs to measure whether programs are meeting the stated requirements, objectives and challenges as outlined in *Information Power*. The most common method of studying school library media programs remains the questionnaire (Grover & Fowler, 1992). Although anthropologists have been conducting ethnographic studies of schools and their cultures since the late 1940s, there have been few such studies of school libraries (Mellon, 1990; Spindler, 1982). Although a survey can measure a program's perceived effectiveness, only observation can confirm this perception. Thus, this study assesses forty-eight school library media programs within the culture of their schools using both qualitative means (unobtrusive observations with content analysis) and quantitative means (a questionnaire with statistical analysis).

Like other philosophical calls for education reform in the 1980s, *Information Power* is research-based. It defines the mission of the library media program as ensuring "that students and staff are effective users of ideas and information" To fulfill this mission, three factors are required in the culture of the school to create effective programs:

1. full integration of the library media program into the curriculum
2. a partnership among the library media specialist, district-level personnel, administrators, teachers, and parents,
3. the serious commitment of each of those partners to the value of universal and unrestricted access to information and ideas

In addition, seven objectives are identified:

1. to provide intellectual access to information;
2. to provide physical access to information;
3. to provide learning experiences that encourage users to become discriminating consumers and skilled creators of information;
4. to provide leadership, instruction, and consulting assistance;
5. to provide resources and activities that contribute to lifelong learning;
6. to provide a facility that functions as the information center of the school;
7. to provide resources and learning activities that represent a diversity of experiences, opinions, social and cultural perspectives. (AASL & AECT, 1988, pp. 1-2).

Information Power also identifies five challenges faced by library media specialists in reshaping their programs to fulfill these guidelines:

1. To provide intellectual and physical access to information and ideas for a diverse population whose needs are changing rapidly
2. To ensure equity and freedom of access to information and

> ideas, unimpeded by social, cultural, economic, geographic, or technological constraints
> 3. To promote literacy and enjoyment of reading, viewing, and listening for young people at all ages and stages of development
> 4. To provide leadership and expertise in the use of information and instructional technologies
> 5. To participate in networks that enhance access to resources located outside the school. (AASL & AECT, 1988, pp. 3-12)

Research has shown that only when it is possible for librarian and teacher to collaborate can the library media program's full benefits be realized for student learning (Eaton & McCarthy, 1995; Giorgis & Peterson, 1996; Haycock, 1992; Putnam, 1996; Shannon, 1996). Such collaboration, however, does not come easily. Joint planning takes time, and according to Diane Oberg (1990), it may also involve "negotiating a change in the cultural norms of [the] school, from privacy and self-reliance to collegiality and experimentation." (p. 9) Moreover, in the only study that has recently measured the impact of school library media centers on academic achievement, Keith Curry Lance has shown that well equipped library media centers make a difference. In the Colorado study, Lance (1993) identified the most significant factor on student academic achievement as a well stocked library media program with a library media specialist providing access and a program of services.

This investigation does not attempt to evaluate individual schools or programs, but to assesses the effectiveness of library media programs in implementing *Information Power*. The school culture, the climate of reform, and student achievement influence the opportunities for collaboration and change in library media programs. The realistic opportunities as well as the barriers to change are identified in this study from observations by the investigator and from the responses to the questionnaire by library media specialists and student library media specialist interns. Thus, for each site there are three different perspectives offering a well rounded view of the library media program within the context of the school.

THE CONTEXT—THE SCHOOLS

The forty-eight schools in this study were initially selected by student interns for their 300 hour practicum field experiences in the Spring of 1994 and 1995. Most sites were selected from a database of approximately 200 good school library media programs throughout New England where media specialists have volunteered to serve as mentors in the past five years. The sites are recommended as exemplary, not because they are ideal, but because good people are striving to provide effective programs. They represent all levels: elementary, middle and high schools. The practicum students in this study chose two good schools within commuting distance from their homes where good library media specialists are willing to act as mentors allowing them to share in their programs. In addition, the library media specialists in this study voluntarily agreed to cooperate with the Coordinator of the School Library Media Program, the investigator, by completing the survey under the condition of anonymity.

At the University of Rhode Island's Graduate School of Library and Information Studies, the Coordinator of the School Library Media Program is committed to teach the principles of *Information Power* and to place student interns in schools where mentors are striving to fulfill the mission of *Information Power*. One of the program's requirements is a nine credit-hour practicum and seminar. The practicum requires students to work as interns for 300 hours at two sites (150 hours or five weeks at an elementary school and 150 hours or five weeks at a middle or secondary school). Each student is required in the Fall semester to do observations, interviews, and requests for placement at two sites either from the database of recommended sites or additional sites they have observed. These schools represent exemplary programs where practitioners have high professional standards and serve as capable mentors. In addition, each student must demonstrate thirty competencies by fulfilling all three roles of the library media specialist: teacher, information specialist, and instructional consultant. The coordinator routinely visits each site to observe the student's progress and growth. Thus as both the coordinator and the investigator of this study, visits to the practicum sites also provided opportunities for unobtrusive observations. All sites and individuals will remain anonymous and are treated in the aggregate.

While all the library media specialists expressed a commitment to the principles of *Information Power*, the opportunities for implementation as well as collaborations with teachers differed widely. Some schools have many advantages: creative and enthusiastic full-time library media specialist, library media support staff, a flexible schedule, opportunities to collaborate with teachers, and supportive administrators, teachers, parents, and students. Other schools have few advantages: an enthusiastic but part-time library media specialist covering several schools, no library media support staff, a rigid schedule of classes, few opportunities to collaborate with teachers, and less supportive administrators, teachers, parents, and students.

Library media specialists without flexible schedules have little time to work with teachers and less opportunity to plan integrated activities for student learning. Moreover, Eleonor Putnam's research (1996) supports earlier studies revealing that while library media specialists perceive their role of instructional consultant as important, practice is lagging in fixed schedule programs. Putnam's results confirm that "Flexible schedule programs can provide a better vehicle to achieving a well-developed library media program." (p. 47) Putnam concludes that, "For *Information Power* to be more widely implemented in the schools, more library media specialists must work within a flexible schedule program." (p. 48) In this study the roles of the library media specialist vary from school to school as does the learning climate, even though the library media specialists are aware of the importance of all three roles. Despite the enthusiasm of the library media specialists, conditions for implementing *Information Power* are not necessarily equitable or optimum in each school.

Factors which appear to be disadvantages—for instance, budgetary and scheduling constraints—are useful in this study to help identify barriers to implementing *Information Power* programs. While all high schools in this study have flexibly scheduled programs, most elementary schools do not. Financial limitations into the 1990s are typical both in New England and nationwide, especially in elementary programs (DeCandido & Mahony, 1992; White, 1990) and since the end of the Elementary and Secondary Education Act (ESEA Title IV) funds (McCarthy, 1993). Recognizing that not all sites are ideal, this study focuses on what happens when good people try to move towards the ideal, but must adapt to what is possible given the school culture (Eaton & McCarthy, 1995).

FIELDWORK METHODOLOGY

Objectives

The objectives for this study are:

1. To analyze to what extent library media programs are able to meet the mission, requirements, objectives, and challenges of *Information Power*,
2. To assess the realistic opportunities and barriers library media specialists face in translating the mission of *Information Power* into realizable programs, and
3. To identify how library media programs are influenced by the culture of the school.

Quantitative Methods

To measure these objectives, the investigator used a combination of methods. She designed, pretested, and revised a survey instrument eliminating any ambiguity in language. The survey questions are straightforward and ask to what extent library media programs fulfill specific elements of *Information Power*. Thus, the survey instrument is valid by measuring what was intended. The investigator used forty-eight sites with voluntary participation of library media specialists and student interns. A total of one hundred and four respondents completed the questionnaire with forty-eight library media specialists and fifty-six students from the forty-eight practicum sites. Eight additional student responses represent interns who completed their practicum at sites that were also participating in this study. The library media specialists at these sites, however, were not asked to complete a duplicate survey, nor were their scores duplicated. Thus, the responses were not paired, but averaged to obtain mean scores for each question. Responses from library media specialists and student interns provide a check on reliability.

Quantitative responses using a Likert-type scale for forced-choice questions (1-15) were tabulated and tables were prepared to compare means and standard deviations of mentor and student responses as well as to measure the perceived success of library media programs to conform to the national guidelines. The following elements from *Information Power* were measured: the three required factors (questions 1-3), the seven objectives (questions 4-10), and the five challenges (questions 11-15).

Qualitative Methods

To assess further the objectives, qualitative methods were used to evaluate the influence of the school culture on the library media program. During the coordinator's routine observations of the students' progress at the practicum sites, she observed the ongoing activities, programs, and school culture. By a school culture, one implies the learning climate, including shared beliefs, customs, expectations, and practices of teachers, administrators, library media specialists, parents and students. Using unobtrusive observations of programs as well as discussions with library media specialists and student interns, the coordinator gleaned insights into the whole learning community. The investigator applied content analysis to the recorded observations, identifying subject categories focusing on the library media program within the school culture.

In addition, survey questions 16-20 were open-ended asking library media specialists and student interns whether they believe the mission is realizable in their schools and how the school culture, including schedule, attitudes, and technology influence their programs. Content analysis of open-ended questions allowed the investigator to identify and rank-order both positive and negative factors that influence library media programs. The students' and the library media specialists' explanations for the open-ended questions were similar or the same; thus, the rationales of both were coded into categories, combined, and rank-ordered in questions 16 - 20.

The investigator was thus able to gain a full insight into the data and to make inferences about the schools' programs from the perspectives of the library media specialists, the student interns, and the coordinator. The combination of both quantitative and qualitative data yields a solid foundation for grounded theory on the effectiveness of school library media programs and the factors governing implementation of *Information Power* in schools in the New England region. While this data cannot be generalized to the whole country, the results do confirm studies done in other geographic areas as well (Putnam, 1996; Shannon, 1996).

RESULTS: INTERPRETATION OF DATA

Information Power

When asked in question 16 whether the mission, objectives, and challenges of *Information Power* are fully realizable at your school, 42 percent of the library media specialists and 48 percent of the students indicated "yes." Library media specialists appear less optimistic with 58 percent of the library media specialists as opposed to 52 percent of the students indicating that *Information Power* cannot be realized or only somewhat realized (see Table 1).

TABLE 1

QUESTION 16: Do you believe that the mission, objectives, and challenges of *Information Power* are realizable at your school?

	YES	%	SOME-WHAT	%	NO	%	ROW TOTAL	ROW %
LMS Responses	20	41.7	13	27.0	15	31.3	48	100%
Student Responses	27	48.2	15	26.8	14	25.0	56	100%
COLUMN TOTAL	47	45.2	28	26.9	29	27.9	104	100%

Both students and practitioners offered the same reasons; so their open-ended explanations were coded and rank-ordered together into either positive or negative factors. The negative factors (or barriers) prohibiting the realization of *Information Power* were identified as:

- Lack of support for budget, resources, technology, and staff;
- Lack of a flexible schedule to allow for collaboration;
- Lack of support and commitment from school committees, administrators, unions and teachers reluctant to change;
- Lack of an educational philosophy or vision supportive of *Information Power*; and
- Inability to fulfill the instructional consultant role.

The positive factors (or opportunities) supporting the realization of *Information Power* were identified as:

- Strong library media specialist committed to reaching out to teachers and providing a high quality program;
- Support from administration and teachers;
- Collaboration with teachers and the use of the library media center by teachers;
- Support for budget and resources by administration; and
- An educational philosophy or climate conducive for students to use information resources wisely and to appreciate literature.

Ironically, the reasons given as negative factors are similar to those given as positive factors for the implementation of *Information Power*. The number one element identified as necessary to fulfill the mission is a professional library media specialist committed to provide a high quality program. Both practitioners and students recognized that it is the individual who creates effective programs, but without support cannot fulfill the mission alone. Support is needed from administrators (for budget, scheduling, staff, resources, and technology) and from teachers (for collaboration and integration). Thus, without change, *Information Power* will remain an ideal, not a reality for the majority of library media programs in New England.

Staff and Schedule

Are programs fully staffed and flexibly scheduled? Yes, if it is a high school or a middle school program. High schools and middle schools have full-time library media specialists and most had at least a full-time assistant for clerical or technical support. The elementary programs, however, are not flexibly scheduled and lack support staff. Only one elementary program has a full-time library media specialist with a full-time assistant. According to the demographics, most elementary library media specialists cover more than one school with little or no support staff. While all high schools have flexible schedules and middle schools have either flexible or modified flexible schedules, most elementary schools have fixed schedules with assigned classes. Although elementary and secondary programs were identified, all library media specialists' responses were combined and all practicum students' responses were combined when creating tables for frequency counts and percentage for questions 16, 17, and 19. Table 2 shows almost 50 percent of the schools have fixed schedules with assigned classes while slightly more than 50 percent have a flexible schedule (see Table 2). This correlates to an approximately equal division of elementary with fixed schedules and secondary with middle or high school programs with flexible schedules. The eight middle schools in this study were counted as secondary programs because of their flexible or modified- flexible schedule.

When media specialists were asked in question 17 to explain their schedule, program, and use of their library media centers, 50 percent identified positive elements, while the other 50 percent identified negative elements. The type of schedule appears to be the determining factor in how library media specialists view their programs. Those library media specialists with flexible schedules identified the best feature of their program as the integration with the curriculum because of cooperative planning with teachers and meaningful assignments for students. Most respondents with flexible schedules also observed greater faculty and student use because teachers who used the facility were more apt to create research

TABLE 2

QUESTION 17: Does your library media program have an open and flexible schedule?

	YES	%	SOME-WHAT	%	NO	%	ROW TOTAL	ROW %
LMS Responses	25	52.1	7	14.6	16	33.3	48	100%
Student Responses	29	51.8	7	12.5	20	35.7	56	100%
COLUMN TOTAL	54	51.9	14	13.5	36	34.6	104	100%

assignments to encourage student use. According to the respondents, the students in these schools viewed the library media center as the place of choice to do research and assignments. Two high school library media specialists, however, complained that their students viewed the library as an optional study hall because that has become its primary function. One respondent lamented that the use of the library media center as a study hall has limited teachers' use and limited media services that could be provided. The library media specialist commented further that the principal views the library as a "privilege for study hall students." The student intern at this site confirmed that the library media specialist is so busy supervising study hall students, that the "program is practically non-existent." The investigator believes that the diminished expectations by the principal and teachers, as well as the lack of initiative by the library media specialist, has hindered the development of a program of services integrated with the curriculum.

Elementary library media specialists, on the other hand, reported that their fixed schedules create the following barriers that hinder their programs:

- library classes taught in isolation impede student achievement;
- lack of open time in the schedule inhibits planning with teachers;
- and lack of an integrated program hinders curriculum development.

With a fixed schedule of approximately five assigned classes per day, the elementary school library media specialists lamented that they are often viewed as "preparation or unassigned time" by teachers who have a free period during library time. Furthermore, without time to collaborate with teachers, elementary library media specialists seem limited to teaching skills in isolation or to reading stories and then to providing circulation time. When these assigned classes are in session, in some schools students do not have access to the library media resources since there is no additional staff to service them. One library media specialist stated that "library class" is viewed by teachers as enrichment or "literature appreciation," but not "real learning" because "real learning is what goes on in the classroom." Although library media specialists desire to fulfill the instructional consultant role, the elementary school schedule does not allow time to collaborate with teachers. Therefore, collaboration and team teaching with teachers was practically non-existent for most elementary programs on a fixed schedule, except for some limited opportunities. For the most part, connections with the curriculum took place when the library media specialist was flexible and coordinated plans with a classroom theme or topic in an informal activity.

Informational and Instructional Technology

How well have informational and instructional technologies been integrated into the whole curriculum? Not well according to most respondents when asked in question 19 to describe their instructional technology programs. Most library media specialists participating in this study do not even have automated systems for circulation and online catalog. Only one-third or sixteen of the forty-eight schools have automated systems including fourteen secondary schools and two elementary schools. Six respondents indicated that they were either in process of planning for automation or converting their partial record circulation system to a full MARC record catalog system or were writing grants to prepare for automation. Twenty-six schools have no automation plans or no funds for automation (see Table 3).

The determining factor in creating instructional technology programs was whether there was a budget for technology. Two-thirds of the respondents did not have any budget for technology. The comments describing technology programs in question 19 were coded and rank-ordered into either negative factors or positive factors. Many library media specialists lamented that there was no technology in their facilities because there was "no budget" for technology. Some commented that the technology budget was centralized in the district or an administrator or "tech-ed teacher" had responsibility for the technology budget. In those schools the person with budgetary authority for technology did not seem to share the vision of the library media center as the hub of informational and instructional technology. A few schools did not even have unified library media programs because audio-visual and instructional technologies were located elsewhere, either centralized in the district or in other departments.

TABLE 3

QUESTION 19: Do you have an automated system, circulation and catalog?

	YES	%	SOME-WHAT	%	NO	%	ROW TOTAL	ROW %
LMS Responses	16	33.3	6	12.5	26	54.2	48	100%
Student Responses	17	30.3	9	16.1	30	53.6	56	100%
COLUMN TOTAL	33	31.7	15	14.4	56	53.9	104	100%

The widest discrepancy in technology programs appears between high school programs that were automated and had technology and elementary programs that were not automated and had little or no technology. There seems to be a lack of vision and planning for informational and instructional technologies in some library media programs, especially elementary schools where print budgets also are severely limited. In this study most schools did not have a system-wide K-12 technology plan in 1994 and 1995, although a few were beginning the process of creating one. It seems imperative to this observer that library media specialist need to take a leadership role in the planning process or they will be left behind. Some library media specialists, especially in elementary programs, were understandably reluctant to assume more responsibility for technology, citing as reasons: lack of time in a fixed schedule, lack of technical knowledge and lack of technology support staff.

Library media specialists identified the major advantage of technology in their programs as providing better access to resources and information for students and teachers. The most frequently cited technology resources for high school and middle school programs include the following: an online catalog; CD-ROM databases, such as SIRS, Infotrac, electronic encyclopedias, Readers' Guide, and Newsbank; an Internet connection; and a networked computer lab. Although some schools had Internet connections, most were limited to one computer and none had yet formulated policies for student access. (Since completion of this survey, many districts have adopted a Technology Plan K-12 and some now have Acceptable Use Guidelines or Policies for responsible use of the Internet by students.)

Budgets

Are library media budgets adequate to support effective programs? For the most part, "no," according to forty-six library media specialists who provided data on their budgets. The survey asked for a breakdown of budget figures for "print," "a-v," "technology," and "supplies." A chart was created from the data to identify the range of budget figures and the averages. While the range of the print budget was from $0 to $17,000, the mean print budget was $5,390. The average audio-visual ("a-v") budget was $1,338. The average technology budget was $734; however, if the thirty-two sites with zero budgets for technology are eliminated from the data, then the mean budget for sixteen schools is $2,203. With a budget average of $2,203 each of the sixteen schools could purchase approximately one computer. Therefore, library media specialists commented that budgets for technology were non-existent or inadequate. The average supplies budget was $461. One person commented that the library media budget had been cut 50 percent for that fiscal year. The budgets for library media centers in Rhode Island reflect the decrease in overall budgets for Rhode Island schools in the 1990s due to a decrease in state aid to the local districts. Massachusetts and other New England states have also reported level funding of school budgets with level funding or decreases in library media center budgets.

It is not surprising that high school budgets are about four times higher than the elementary school budgets. In one school district an elementary school budget was $1,700 while the high school budget was ten times higher at $17,000. Some school districts appropriate funds based on a per-pupil cost and high schools receive a larger allocation because of their larger populations. A few high school library media specialists admitted that their budgets increased by as much as $10,000 in preparation for the New England Association of Secondary Schools and Colleges (NEASC) accreditation process. Elementary schools are not accredited by NEASC and thus do not benefit financially from this process. Some media specialists stated that their districts give one line-item budget for all library resources which was reported under print. Some schools allocate the a-v budget to individual departments or a centralized office, rather than to the library media centers. The budget item lacking for most programs was identified as "technology." For most schools in this study, it is evident that budgets are not meeting the high service programs in elementary or secondary programs as reported in *Information Power*, although these are good sites in New England (AASL & AECT, 1988, Appendix A).

School Culture and Information Power: A Reality

How have library media specialists succeeded in negotiating change and translating the mission into realizable programs in their schools? Although library media specialists in this study are strongly committed to the mission and objectives set in *Information Power*, no library media program in this study has fully implemented all these guidelines yet. Frequency counts and mean scores were tabulated for each of the Likert-type scale for forced-choice questions. The investigator used the following numerical code to calculate each response:

1 = not yet
2 = somewhat
3 = frequently
4 = fully.

Questions 1-3 asked whether their school met the three required factors: (1) Full integration into the curriculum, (2) Partnerships with library media specialist and others, and (3) Commitment to access. The library media specialists' mean score for required factors was 2.51 (somewhat) and the student interns' mean score was 2.53 for the required factors 1-3 (see Table 4).

Questions 4-10 asked to what extent their program was able to meet the seven objectives of *Information Power*: (4) Intellectual access; (5) Physical access; (6) Learning experiences; (7) Leadership in instructional technology; (8) Resources and activities for lifelong learning; (9) Facility as information center; (10) Resources and learning activities for diversity. The library media specialists' mean score for the seven objectives was 3.07 (frequently) and the students' mean score was 3.00 (frequently) (see Table 5).

TABLE 4

Comparison of Library Media Specialists' (LMS) and Students' Perceptions of Required Factors

Questions 1-3: *Information Power* requires three factors that must be present to achieve the national mission. To what extent does your school support these factors?

Likert-type Scale (Choices and Code): Not Yet = 1; Somewhat = 2; Frequently = 3; Fully = 4

Question # and Abbreviated Statement	LMS Responses (mean)	LMS Standard Deviation	Student Responses (mean)	Student Standard Deviation	Mean Difference
#1: Full integration into Curriculum...	2.60	.869	2.45	.851	.15
#2: Partnerships with LMS and others...	2.44	.848	2.54	.808	-.10
#3: Commitment to access...	2.48	1.01	2.59	.987	-.11
Average Means Total	2.51		2.53		

TABLE 5

Comparison of Library Media Specialists' (LMS) and Students' Perceptions of Seven Objectives

Questions 4-10: To what extent are you able to meet the following seven objectives?

Likert-type Scale (Choices and Code): Not Yet = 1; Somewhat = 2; Frequently = 3; Fully = 4

Question # and Abbreviated Statement	LMS Responses (mean)	LMS Standard Deviation	Student Responses (mean)	Student Standard Deviation	Mean Difference
#4: Intellectual access...	2.96	.743	3.04	.785	-.08
#5: Physical access...	3.42	.647	3.31	.69	.11
#6: Learning experiences...	2.92	.647	2.89	.679	.03
#7: Leadership in instructional technology...	2.90	.778	2.86	.962	.04
#8: Resources and activities for lifelong learning...	3.10	.627	2.93	.684	.17
#9: Facility as information center	3.10	.692	3.09	.793	.01
#10: Resources & activities represent diversity...	3.09	.751	2.89	.824	.20
Average Means Total	3.07		3.00		

Questions 11-15 asked to what extent their program was able to meet the five challenges to fulfill the mission: (11) Access/Diversity, (12) Equity and freedom of access, (13) Promote literacy and reading, (14) Leadership in information and instructional technologies, (15) Networks to enhance access. The library media specialists' mean score for the five challenges was 2.84 (somewhat) and the students' mean score was 2.83 (somewhat) (see Table 6). The overall mean score for questions 1-15 for library media specialists was 2.80 (somewhat) and the overall mean score for students was 2.78 (somewhat). Tables 4, 5, and 6 reveal both the mean scores for each question as perceived by both the library media specialists and the student interns as well as the standard deviations and difference between the means. The perceived levels of program fulfillment by the library media specialists and student interns appear comparable and reliable. These perceptions also appear valid and reliable to the investigator after observing each school.

TABLE 6

Comparison of Library Media Specialists' (LMS) and Students' Perceptions of Challenges

Questions 11-16: *Information Power* identifies five challenges to fulfill the mission. To what extent are you able to meet these challenges?

Likert-type Scale (Choices and Code): Not Yet = 1; Somewhat = 2; Frequently = 3; Fully = 4

Question # and Abbreviated Statement	LMS Responses (mean)	LMS Standard Deviation	Student Responses (mean)	Student Standard Deviation	Mean Difference
#11: Access/Diversity	2.89	.679	2.84	.757	.05
#12: Equity and freedom of access...	2.92	.679	2.95	.903	-.03
#13: To promote literacy and reading...	3.21	.627	3.11	.679	.10
#14: Leadership in information and instructional technologies	2.85	.714	2.79	.889	.06
#15: Networks enhance access	2.35	.838	2.48	.894	-.13
Average Means Total	2.84		2.83		

School Culture and the Library Media Program

Question 20 asked: "What elements in your school environment help or hinder full implementation of the mission of *Information Power* in your program?" The respondents identified characteristics that were coded into either positive or negative factors and then rank-ordered. Respondents who offered positive elements claimed that their programs were enhanced by the following factors:

1. use, respect, and support of the library media program by teachers, principals, and administration;
2. a program that promotes the reading habit and integrates information skills with the curriculum;
3. an enthusiastic proactive library media specialist who encourages use.

Other positive factors cited were a good facility, good public relations, and supportive library staff and parents.

On the other hand, respondents who offered negative elements claimed that their programs were hindered by the following factors:

1. Budget constraints, especially lack of money for technology;
2. Lack of a flexible schedule prohibiting planning time with teachers;
3. Lack of commitment, use, and support from teachers who are reluctant to change;
4. Inadequate or small facility with inadequate resources;
5. Lack of vision and support from administration.

Other negative factors cited were lack of support staff, lack of a unified media center; lack of continuity because the library media specialist is transient, lack of public relations to gain community support for programs.

RECOMMENDATIONS AND FUTURE IMPLICATIONS

Although education reform remains a national political issue since the publication of A Nation at Risk (NCEE, 1983) and the national legislation of Goals 2000, the past decade has seen little systemic change. Educational reform movements, however, have given rise to ambitious programs for the development of national standards in subject areas, but most of these efforts have foundered at the national level (Gagnon, 1996).

Greater hope for substantive change may lie in specific state initiatives and local efforts. Here, too, the record is disappointing. All of the New England state educational media associations have created standards or learning goals for school library media programs during the 1990s, but these efforts have not been translated into meaningful state standards. Without states requiring implementation of standards including full-time library media specialists and flexible schedules, library media specialist are left to negotiate change in their own schools. The major stumbling block for elementary library media specialists was that "specialists" are assigned to cover classes for the contractual unassigned time for elementary teachers. Thus, professionals in this study encountered limited success in negotiating change. Their problems seem doubly significant because they are a biased sample of good library media specialists anxious to create effective programs. As cooperating media specialists and mentors for student interns, they are a self-selected group providing positive role models. These individuals and their programs are well above average for the New England region; yet, their success in implementing *Information Power* has been limited. With fifty-eight percent of these library media specialists admitting that implementation of *Information Power* is only somewhat or not realizable, what are the implications for others? Perhaps, it is time for the profession to establish national standards that are endorsed by states as benchmarks for achievement of information literacy for all students.

Library media specialists and their professional associations need partnerships, however, in order to establish these standards at all levels: national, regional, state and local. It is time to stop talking to ourselves and to stop making unrealistic demands on individuals, but instead use the political process to gain support for the proposed AASL and AECT National Standards for Information Literacy by connecting them to Goals 2000 and other national standard movements. While AASL and AECT are currently working to develop new standards in information literacy, they should continue to seek additional partners to endorse and implement these standards across all disciplines. Support is needed from a broad base of educational groups such as: the national teachers' unions, administrators, associations for curriculum development, national standards groups, national associations for school committees, and parent advisory groups. At the same time, regional and state associations need help to translate the proposed national standards into mandated state standards by gaining support from state legislatures, state departments of education, and state education boards.

These groups represent our fellow stakeholders in a shared enterprise of education—where library media programs and schools can become learning-centered and where students are achieving information literacy skills. While recognizing that all stakeholders are committed to education and to the idea that all children can learn, we must also recognize our cultural differences. Each group has a unique constituency, language, and culture focused on their philosophical and political beliefs, expectations, and habitual approaches to ensuring good education for all children. As we work to ensure all children have equal access to a variety of information resources and to information literacy skills, we also need to acknowledge and understand the cultures and vocabularies of our potential allies. We need to persuade stakeholders to accept our goals and standards by demonstrating persuasively that we can help them realize their goals, and in so doing ensure that all children learn to use information and ideas effectively. Furthermore, our new vision needs to offer not only information literacy standards, but also a framework for teaching and assessing them. We must be accountable for our library media programs and for student achievement of information literacy skills if our library media programs are going to survive and thrive in the twenty-first century.

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APPENDIX

To:
School:

From: Dr. Cheryl A. McCarthy
URI, GSLIS, Kingston, RI 02881

The Challenges of Implementing Information Power: National Guidelines for School Library Media Programs - a Survey

Would you please answer the following questions about your school?

1. Number of students at this school: _______ of faculty: _______ Number of library media specialists (FTE): _______ Number of library clerks/support staff (FTE): _______ Number of volunteers: _______

2. What is the size of your collection of books? _______ periodicals: _______ Audio Visual Materials: _______ Computers: _______ Computer software: _______

3. What is the average age of your collection? Pre-1970's _____ '70s _____ '80s _____ '90s _____

4. Annual print budget _______ Annual AV budget _______ Annual budget for technology _______ Annual supply budget _______

5. Number of items purchased in the past 12 months: Books: _______ Periodical subscriptions: _______ Audio-visual materials: (specify) _______ Computers: _______ Computer software: _______

6. Do you cover other schools? _______ How many:_______ Total number of students: _______ Number of faculty: _______ Number of other library media specialists (FTE: _______ Number of library clerks/support staff (FTE): _______

***Information Power* requires three factors that must be present to achieve the national mission. To what extent does you school support these factors?**

1. Full integration of the library media program into the curriculum.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

2. A partnership among the library media specialist, district level personnel, administrators, teachers, and parents.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

3. The serious commitment of each of those partners to the value of universal and unrestricted access to information and ideas.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

To what extent are you able to meet the following seven objectives?

4. To provide intellectual access to information through systematic learning activities.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

5. To provide physical access to information through a carefully selected and systematically organized collection.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

6. To provide learning experiences that encourage users to become discriminating consumers and skilled creators of information.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

7. To provide leadership, instruction, and consulting assistance in the use of instructional and information technology.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

8. To provide resources and activities that contribute to lifelong learning.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

9. To provide a facility that functions as the information center of the school.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

10 To provide resources and learning activities that represent a diversity of experiences, opinions, social and cultural perspectives.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

***Information Power* identifies five challenges to fulfill the mission. To what extent are you able to meet these challenges?**

11. To provide intellectual and physical access to information and ideas for a diverse population whose needs are changing rapidly.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

12. To ensure equity and freedom of access to information and ideas, unimpeded by social, cultural, economic, geographic, or technological constraints.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

13. To promote literacy and the enjoyment of reading, viewing, and listening for young people at all ages and stages of development.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

14. To provide leadership and expertise in the use of information and instructional technologies.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

15. To participate in networks that enhance access to resources located outside the school.
a. _____ not yet b. _____ somewhat c. _____ frequently d. _____ fully

16. Do you believe that the mission, objective, and challenges of *Information Power* are realizable at your school? Why or why not?

17. Does you library media program have an open and flexible schedule? Please describe your schedule, program, and use of the library center.

18. How is the use of the library media program influenced by the attitudes and expectations of teachers, administrators, and children toward libraries, reading, and learning?

19. What instructional technologies do you have in the library media center and how are they used by you, teachers, administrators, and children? Do you have an automated system, circulation and catalog?

20. What elements in your school environment help or hinder full implementation of the mission of *Information Power* in you program?

Pleas use the reverse of this sheet if necessary. Thank you.

TEACHER-LIBRARIANS IN LEARNING ORGANIZATIONS

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ABSTRACT

Teacher-librarians must function both as members of teams engaged in organizational learning and as leaders of leaders. The teacher-librarian, therefore, must be a mirror image of other teacher leaders, while also bringing added value as a leader in teacher-librarianship. To meet the needs of schools if they are to be learning organizations, teacher-librarians will need a unique blend: a knowledge base; technical skills; interpersonal and team skills; and a particular system of values and beliefs. Credibility as a teacher with colleagues and the principal is crucial for success.

TEACHER-LIBRARIANS IN LEARNING ORGANIZATIONS

Within the last decade, reform efforts have dominated the educational landscape throughout the world (Cousins, 1996; Fullan, 1993; Sheppard & Brown, 1996). In spite of such emphasis on reform, research suggests that these efforts may not result in the improvements in student achievement that are anticipated by reformers (Bremen & MacLauglin, 1976; Deal, 1990; Cranston, 1994; Fullan, 1993, 1995; Murphy & Hallinger, 1993; Sarason, 1990; Sergiovanni, 1995; Sheppard & Brown, 1995). Murphy and Hallinger's (1993) research indicates that "at neither the theoretical nor the conceptual levels was there much evidence to link...restructuring efforts with changes in classrooms, relationships between teachers and students, and/or student outcomes." (p. 254) For example, in spite of the emphasis throughout the world on school councils, Fullan (1995) concludes that the empirical evidence in the literature up to this point is that the majority of councils are not successful. Similarly, even though theories of leadership are moving away from technological, rational planning models, toward cultural, collaborative approaches in which teachers are viewed as partners (Blase, 1993; 1987; Evans, 1993; Griffiths, 1988; Laroque & Coleman, 1991; March, 1988; Pellicer, Anderson, Keefe, Kelley, & McCleary, 1990; Weber, 1989), Clark & Clark's (1996) research reveals that "In spite of the many benefits of working in collaborative environments, there is considerable evidence that many teachers still work in isolation." (p. 2)

In light of the uncertainty of reform efforts, "the generative concept of the learning organization" (Fullan, 1993, p. 6) provides the basis of a promising theoretical framework for the development of better schools. Redding and Catalanello (1992) contend that "amid sometimes unpredictable, always uncertain, highly turbulent business conditions, an organization's capacity to learn as it goes may be the only true source of competitive advantage." (p. 52) Similarly, Handy (1995) argues that:

> In an uncertain world, where all we know for sure is that nothing is sure, we are going to need organizations that are continually renewing themselves, reinventing themselves, reinvigorating themselves. These are the learning organizations, the ones with the learning habit. Without the habit of learning, they will not dream the dream, let alone have any hope of managing it. (p. 45)

While the concept of the learning organization has developed outside of the school setting (Senge, 1990), research within education (Fullan, 1993; Leithwood, Dart, Jantzi & Steinbach, 1993; Louis, 1994) supports its meaningfulness in the school context. Fullan (1995) contends that if we are to succeed in bringing about meaningful improvement "schools must become learning organizations." (p. 234) Louis, Kruse and Raywid (1996) contend that:

> The current reform movement focuses on structural and curricular changes as the main ingredients of effective schools, but pays less attention to altering the day-to-day work of teachers. When schools are seen as learning organizations and professional communities, however, attention is focused on teachers' work as the key instrument of reform. By emphasizing needed changes in the culture of schools and the daily practice of professionals, the reform movement can concentrate on the heart of the school—the teaching and learning process. (p. 7)

The concept of the learning organization is grounded in the five" learning disciplines-lifelong programs of study and practice" expounded by Senge (1990):

> Personal mastery—learning to expand our personal capacity to create the results we most desire, and creating an organizational environment which encourages all its members to develop themselves toward the goals and purposes they choose.
>
> Mental models—reflecting upon, continually clarifying, and improving our internal pictures of the world, and seeing how they shape our actions and decisions.
>
> Shared vision—building a sense of commitment in a group, by developing shared images of the future we seek to create, and the principles and guiding practices by which we hope to get there.
>
> Team learning—transforming conversational and collective thinking skills, so that groups of people can reliably develop intelligence and ability greater than the sum of individual members' talents.
>
> Systems thinking—a way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behavior of systems. This discipline helps us to see how to change systems more effectively, and to act more in tune with the larger processes of the natural and economic world. (Senge, Roberts, Ross, Smith, & Kleiner, 1994, p. 6)

While some practitioners and researchers found these five disciplines somewhat abstract (Senge et al., 1994), they and others have attempted to identify other characteristics, consistent with these disciplines, that are somewhat more concrete. Redding and Catalanello (1992) envisage four defining characteristics of the learning organization: constant readiness; continuous planning; improvised implementation; and action learning. Similarly, Marsick and Watkins (1996) identify seven action imperatives for building learning organizations: creation of continuous learning opportunities; promotion of dialogue and inquiry; encouragement of collaboration and team learning; establishment of systems to capture and share learning; empowerment of people toward collective vision; connection of the organization to its environment, and leaders who model and support learning at the individual, team, and organizational level.

Organizational changes needed in the development of schools and districts as learning organizations require a major transformation in models of leadership and teachers' roles (Fullan, 1995; Sheppard &

Brown, 1996). However, it is not surprising that leadership patterns and professional practices in schools and school districts are deeply engrained features of the educational culture that cannot be changed by simply declaring new values. "Deep beliefs and assumptions change as experience changes, and when this happens culture changes." (Senge et al., 1994, pp. 20-21) If we are to develop learning organization, the professional leadership of teachers must be developed. The required professional development cannot be delivered through traditional models of professional development that are dependent upon the one day workshop delivered by an "expert." Ryan (1995) contends that learners' in this expert model are generally assumed to be "ignorant, passive, empty vessels who can be effectively filled up by the expert expounding knowledge." (p. 279) As a consequence of such inadequate professional development, "many teachers and others say they do not want to 'be developed'. In other words, they are not looking for other people to be responsible for their learning...[In a learning organization], "ultimately everyone, supported by colleagues, is responsible for their own learning." (Stoll & Fink, 1996, p. 164) Marsick & Watkins (1996) describe one model of professional development whereby "adult educators in the learning organization assist in the design of self-directed learning and bring learning to people's desks through the decentralized use of computer-based learning systems." (p. 19)

In like manner, Sparks (1996) contends that while professional development is essential if teachers and administrators are to avail of the findings of research on teaching, learning, and leadership, it must be considerably different from past practice. It must not only affect, "the knowledge, attitudes, and practices of individual teachers, administrators, and other school employees, but also the culture and structures of the organizations in which those individuals work," in other words, a major paradigm shift:

> This new form of professional development represents a "paradigm shift." Some of the most important of these shifts represent: an increased focus on both organizational and individual development; staff development efforts driven by clear and coherent strategic plans; a greater focus on student needs and learning outcomes; an inquiry approach to the study of the teaching/learning process by teachers; an inclusion of both generic and content specific pedagogical skills; and greater recognition that staff development is an essential and indispensable part of the reform process. (p. 260)

Similarly, Cousins (1996) states that the redefined leadership role for teachers goes beyond their involvement in school wide activities, that it requires a focus on the classroom and "students' rights to a learner-centred pedagogy." (p. 31) He further observes that if such leadership is to exist, teachers must have opportunities for professional development that needs to take place within the school, rather than in locations outside it.

A major component of professional development in learning organizations occurs as teachers engage in action research which requires them to gather and use new information to challenge the status quo. Sparks (1996) states that "to become learning organizations schools must engage in organizational development activities...based on continual data collection, analysis, and feedback, focusing on the development of groups and individuals to improve group functioning." (p. 262) If schools are to engage in such activities, teams may find some of the information they need in the school, but they will also need to look beyond their school for information (Vail, 1996). For that purpose, Cousins (1996) suggests that if schools and school districts are to be learning organizations, there should exist a strong research department that would not only collect and analyze data on the school, but would also compile literature reviews, and routinely scan news media. While the primary base for such a department would exist at the district level, there would also be a team that would carry out a similar set of tasks at the school level.

It is in the context of current reform efforts and the emerging concept of schools as learning organizations that the Toronto Elementary and Secondary School Teacher-Librarians (1995) ask an essential question related to their future role:

> Are teacher-librarians becoming irrelevant stage magicians whose ultimate trick will be to make themselves disappear? or are they pioneering voyagers, reshaping library information centres by engaging future technologies with critical expertise and imaginative joy? (pp. 2-3)

Galbraith and Lawler (1993) provide an image of role structures in decentralized and lateral work environments such as the learning organization. That image is quite useful as a guide to reflection regarding those questions posed by the Toronto teacher-librarians. They note that "more companies are creating matching, mirror-image structures across as many functions as possible." (p. 48) These mirror-image structures require that there exists a specialist who is a mirror-image of another in each division of the organization or on each team. For example, in each division there would be those with matching skills in specialized areas which would enable each team to have the expertise they need to make site-based decisions. However, we recognize, as does Galbraith and Lawler, that this sometimes presents a problem since there may not be enough work in the area of the specialized function to support a full-time specialist. To deal with that efficiency problem, these organizations have organized into groups which include members who are mirror-images of each other or generalists but in addition, members have their areas of specialization. This allows employees to work laterally with their mirror-image counterparts in many aspects of their work; however, the remainder of their work remains specialized. Galbraith and Lawler argue that in the future greater numbers of organizations will be structured in this way, so that most employees will be mirror-images of each other, but able to add expertise as part of their work when it is required—in other words, act as mirror-images plus when needed.

Galbraith and Lawler contend that increasingly much of the expertise required by the generalists will be accessible through improved information technology:

> Already, electronic mail (E-mail), conferencing on personal computers (PCS) and fax machines, and video conferencing can connect every person in a company with every other person. Fiberoptic networks and next-generation PCS will permit video calls from anyone to everyone. The technology removes some barriers by providing connection between people. Whether connection leads to communication and then to coordination depends on the organizational design. (Galbraith & Lawler, 1993, p. 49)

If teacher-librarians wish to be pioneering voyagers or even to be effective team players in schools that are learning organizations, they need to be mirror-images of other teacher leaders, while also bringing added value as leaders in teacher-librarianship. To meet this demand, teacher-librarians will need a unique blend of characteristics in the following four categories: knowledge base, technical skills; personal, interpersonal and team skills; and a particular system of values and beliefs. Some characteristics within each category will be shared by teachers and teacher-librarians, which is to say that they will be mirror-images of each other. However, teacher-librarians will also be expected to possess added qualities-the plus of the "mirror-images plus."

This mirror-image plus concept is consistent with the position articulated by the International Association of School Librarianship (1995) that "school librarians be qualified teachers who have, in addition, completed professional studies in librarianship." (p. 2) It is also supported by this statement from the Association for Teacher-Librarianship in Canada (1996) that "the teacher-librarian needs to be a highly skilled teacher as well as a librarian, able to function on the school team as a professional with competencies from teacher education and classroom experience as well as from library and information studies" (p. 8).

The American Association of School Librarians recognizes that the educational landscape is changing and that "research on the restructuring of schools calls for the teacher's role to change from a textbook lecturer to that of coach. Students become active learners who create their own knowledge after interacting with information from a variety of resources...often referred to as resource-based learning." (American Association of School Librarians [AASL], 1996a, p. 1) Such an approach requires that members of the educational community "become partners in a shared goal, providing successful learning experiences for all students." (AASL, 1996a, p. 2) In this role the teacher-librarian works with the teacher to plan, design, deliver, and evaluate instruction, serves as teacher and consultant; provides leadership, expertise, and advocacy in the use of technology and resources, encourages students to accept responsibility for their own learning, and manages personnel, resources, facilities, and services that assist students to learn how to learn. The teacher-librarian is viewed as the essential link to connecting students, teachers, and others with the information resources that they need and therefore, "plays a unique and pivotal role in the learning community." (AASL, 1996b, p. 2) The Association describes this role as follows:

> School library media specialists [teacher-librarians] are an integral part of the total educational team which prepares students to become responsible citizens in a changing global society. In today's information age, an individuals [sic] success, even existence, depends largely on the ability to access, evaluate and utilize information. Library media specialists are leaders in carrying out the school's instructional program through their separate but overlapping roles of information specialist, teacher and instructional consultant. (AASL, 1996c)

In site-based managed schools the AASL contends that teacher-librarians are important members of the decision-making team. They act as partners in instruction, budgeting, program planning, and collection development; they collaborate with teachers in designing, implementing, and evaluating instruction; and they access information sources within and outside the school to guide the staff in decision-making (AASL, 1996d). Vail (1996) argues that in such learning environments, teams need to look beyond their school for information, and that one critical source, still not available to many teachers due to limited technical expertise, is the World Wide Web. An essential role of the teacher-librarian, then, would be to assist others in accessing available sources such as that which is available through the World Wide Web.

This position is consistent with that which is taken by The Toronto Board of Education Teacher-librarians (1996) who view themselves as providing educational leadership in a manner that will "encourage and support all students in becoming life-long learners and agents of change, who are self motivated, thoughtful, and literate." (p. 2) This educational leadership will take the form of collaboration with teachers; sharing professional expertise in curriculum design, learning and teaching strategies, and resource materials; serving on various committees; seeking opportunities for professional growth; extending professional growth of administrators, teachers, and support staff, especially in technology; and facilitating the sharing of information with other agencies.

The demands placed on schools today, urban and rural, are intensified by globalization, declining resources, greater calls for accountability, and the impact of information technology. The roles of teachers and administrators are in transition, as all must be leaders within learning organizations and effective users of information technology. As a consequence of these role changes, the role of the teacher-librarian, as one of the school's leaders in accessing all forms of information required in teaching and learning, is also in transition. Like other teachers and educational leaders, teacher-librarians need be leaders in this new environment and they must develop a specialized expertise to facilitate organizational learning within their schools by placing a priority on staff development and school-wide improvement initiatives. The research reported here will show how some principals, teachers, and teacher-librarians are facing this challenge and help us better understand how to move in this direction.

Methodology

For the past three years we have been building a research program investigating leadership for change in schools and districts. Working within the conceptual framework of Senge's learning organization, we have been engaged in four different but related studies. Study One, now in its second year, is a five year study. It began with eight schools, 139 teachers, and 2623 students from one school district in Newfoundland, but it has since been extended to include a total of four districts, 12 schools, 254 teachers, and 4566 students. The 12 schools are located in both rural and urban centers and range in size from 50 to 870 students. Study Two is a case study of two large secondary schools, in two different school districts. Both have been recognized provincially and nationally for outstanding leadership in dealing with change. Both schools have business partners, and both are involved with implementing leading edge technology throughout the curriculum. In both these studies, data were collected using survey instruments, interviews, document analysis (curriculum documents, departmental guidelines and policy documents, school profile information, committee papers and records), observations, and teacher journals. Study Three was conducted in seven schools from Study One and one of the schools in Study Two, and focused on the role of and expectations for the teacher-librarian. The schools were visited and interviews were conducted with the principal and the teacher-librarians in each school during November 1996 and January 1997. As part of the interview, each person was asked to sketch a diagram illustrating how leadership occurred in his or her school. Study Four (in which we are two of four investigators) is research conducted for a special project on school improvement for the Newfoundland Department of Education (1995-97). Qualitative data for this latter study were collected in eight districts and 19 schools, while insights were also gained from survey data obtained from 19 districts, 155 principals, 279 teachers, 223 parents, and 69 students.

Our data for this paper draws on the holistic view of leadership which we have formed of the entire school in Studies One, Two, and Three. It also is informed by the findings from Study Four. Our analysis followed the steps outlined by Woods (1986). These are: (1) Speculative analysis consisting of "tentative reflection, perhaps revealing major insights, that is done throughout the data collection." (p. 121) (2) Classifying and categorizing, or the creation of major categories within the data. (3) Concept formation, which Woods sees as involving the creation of models, typographies, and theory. We see this as the beginning of theory development regarding teacher-librarianship in schools as learning organizations.

Teacher-librarians as Mirror-images of Teachers and Mirror-images Plus

Our findings confirm the validity of what Fullan (1993) describes as the "new work of the teacher." In this "new work" teachers must: have a moral purpose—making a difference in the lives of children; have a deepened knowledge of pedagogy; recognize the links between their work and societal development; have purpose and vision and be "highly interactive and collaborative;" be able to work in new structures (teams of teachers, networks of learning); be lifelong learners; and be change agents (see Table 1).

Teacher & Teacher-Librarian Mirror Images of Each Other	**Teacher-Librarian: Mirror Image Plus**
The new work of the teacher (Fullan, 1993) • Be committed to a moral purpose --making a difference in the lives of children • Deepen their knowledge of pedagogy • Be cognizant of the links between their moral purpose and educational policy and societal development • Be their own person vis-a-vis purpose and vision, and at the same time be highly interactive and collaborative • Work in new structures - clusters of students, teams of teachers, common planning time, links to home and community, participate in wider networks of learning. • Develop the habits and skills of continuous inquiry and learning Immerse themselves in the change process (pp. 80-81)	*The new work of the teacher - librarian* • Design training programs as needed, for groups and individuals, students, teachers & others • Assume a leadership role in school improvement and staff development • Be a model of lifelong, independent learning • Create a learning environment that fosters the new work of the teacher.

Table 1: The New Work of the Teacher and the Teacher-Librarian

All staff (administrators, teachers, and teacher-librarians) in the schools in our studies are driven by a moral commitment to help students. Their talk and interests reveal their practice of and interest in pedagogy. They are knowledgeable of the changing economic times, the movement towards a new post-industrial society, and the impact that has on the skills and knowledge students need. Although individuals emerge as strong leaders in their own right, they are also aware of the need for staffs to work together, of the expectation for partnerships with parents, community members, and other professionals. For example, in one district (in Study One), 54% of the 122 staff members in seven schools identified the whole staff as providing leadership for school improvement.

Although all those we surveyed and interviewed were highly qualified as teachers, they realized that they needed to be lifelong learners if they were to meet the needs of their students. Teacher-librarians were mirror-images of teachers, in that they exhibited the same characteristics as the teachers. In fact, in our research, it is difficult to distinguish the unique role of the teacher-librarian. We found that there is an overlap instead of a sharp division between the roles of the teacher and the teacher-librarian. This overlap in roles is readily revealed in Table 2 which provides examples of the qualifications and work assignments of the teacher-librarians studied. For example, all four of the teacher-librarians in Table 2 have extensive experience as teachers, and three are currently assigned classroom teaching responsibilities in addition to their role as teacher-librarian.

This chapter focuses on two major findings of our studies. The first is that, within schools as learning organizations, teacher-librarians must not only possess the expertise required of teacher-librarians but they must be mirror-images of other teachers if they are to have credibility with them. The discussion of this finding is developed through an analysis of four categories of essential characteristics of the work performed by both teachers and teacher-librarians. These are: knowledge base; technical skills; personal, interpersonal, and team skills; and values and beliefs (Table 3). The second finding is that principals are extremely influential in schoolwide leadership, and teacher-librarians will only have credibility with them if they are mirror-images of teachers. Without that credibility, they cannot successfully perform their specialist role—that of the mirror-images plus.

Knowledge Base & Technical Skills (Resource-Based Learning)

As can be seen from Table 3, two major areas of the work of teachers and teacher-librarians, the knowledge base and technical skills, are grounded in resource-based learning. It is apparent in all schools in our studies that this resource-based learning philosophy is desirable and endorsed in current curriculum documents and guidelines from the provincial Department of Education. The definition of resource-based learning in this context is based on the one from *Learning to Learn* (Newfoundland Department of Education, 1991): It is a broad philosophical approach to learning which (a) actively involves the student in the centre of all learning activities, (b) is dependent on the articulation of process and content objectives, and (c) requires deliberate teacher planning so that multiple resources and varied teaching strategies are incorporated in all plans. Inherent in this definition is an understanding of child development and learning theory, knowledge of the curriculum and instructional development, and a repertoire of instructional strategies which will allow the teacher to design instruction to meet the needs of learners. Since the focus is on the use of a wide range of resources, all teachers are expected to be familiar with the learning resources appropriate for their grade levels and subject areas. Although resource-based learning does not necessarily require collaborative work, our work on schools as learning organizations reveals that the best work occurs when there is collaborative planning and when teachers engage in planning and teaching together. This is consistent with Fullan's (1993) findings regarding "the new work of the teacher" (Table 1), which requires teachers to be highly interactive and collaborative.

Teacher-librarians: Examples of Qualifications & Work Assignment	
Sue	She is a full time teacher-librarian, in her 20th year of teaching, in an urban school which has a French Immersion stream. She is responsible also for the school's computer lab which adjoins the learning resource centre. She has a Bachelor of Music degree and a B.Ed. (Elementary Education). In addition, she has completed the undergraduate Diploma in School Resource Services. She is bilingual, and provides all services in English and French. She is self-taught in computers, and although she does not see herself as having an aptitude for the technical side of computers, she has learned to install software and be the main troubleshooter for technical problems in the school.
May	Fifteen years teaching experience as a high school teacher, twelve of which was as a guidance counselor. Currently she is one of two full time teacher-librarians in an urban secondary school which is on the leading edge of technology. She has a B.Ed, a M. Ed. in School Counseling, and a second M.Ed. in Learning Resources (teacher-librarianship). She and the second teacher-librarian work as a team and are responsible for a compulsory language course which focuses on the research process, taken in the second year of high school (equivalent of grade eleven). This course ensures that all students are taught research skills in a curricular context, including the skills of internet searching for information. Of her role in a dynamic learning environment, she stated, "I couldn't tell you what my role is because it changes every day." She sees herself as a lifelong learner and commented: "I have never felt so ignorant and yet I never felt so accomplished in learning. I have never felt more of a problem solver than since I have taken this [job] on." She concluded: "You can never master it [all the skills you need as a teacher-librarian], you are only going to be evolved to the next level. You are not going to master everything."
Ruth	Over 20 years teaching experience. Currently teaching in a rural school. Her teaching assignment for the current year is: 25% teacher-librarian, 50% kindergarten, 25% grade six classroom teacher. She has a B.Ed degree in primary education, a second B.Ed degree in special education, and has completed six of the ten courses for her undergraduate Diploma in School Resource Services. Although she has not completed formal courses in computers in education, she is self-taught with a computer with Internet access at home. She shares responsibility with another teacher for the school's computer facilities. She has taught kindergarten, primary grades, grade four, grade six, special education.
Jim	High school science teacher with 16 years experience, currently in his first year as a teacher-librarian. Jim has completed all course requirements for his M.Ed in School Resource Services except for his final project (which is near completion). Jim has developed considerable expertise in cooperative learning and is a school leader in working collaboratively with others using cooperative learning strategies. He became interested in becoming a teacher-librarian after working cooperatively with the school's teacher-librarian. Although he has assumed a major role in teaching colleagues to use new technology in the classroom, and is responsible for much of the school's computer resources, he admits that "I am mainly self-taught." He adds, however, that "I want to know it" and that has motivated him to keep ahead of the technology.

Table 2: Teacher-librarians: Examples of Qualifications & Work Assignment

To be successful, teacher-librarians must be mirror-images of the teachers described above, or, in other words, have credibility as a teacher committed to a resource-based learning philosophy and competent in all aspects of implementing such a program. Currently, all teachers and school administrators (not only the teacher-librarian) are expected to keep up to date and integrate new ideas (including new information technologies) into instruction. On the "plus" side, however, teacher-librarians need to be knowledgeable

Teacher & Teacher-Librarian Mirror Images of Each Other	**Teacher-Librarian: Mirror Images Plus**
Knowledge Base(Resource-Based Learning) • The practice of pedagogy • Instructional strategies • Child development • Learning theory • Instructional development • Curriculum knowledge (Theory & Practice) • Learning resources--access and use • Children's literature (Primary/Elementary) • Educational change process • Interactive professionalism • Action research • Leadership (not management) • School and society "Model of good teaching practices"	• National & Provincial Standards and Guidelines for Teacher-Librarianship • Advanced training in instructional development • The teaching of independent learning skills • Access to information/ Information networks • Validation of appropriate learning resources to meet learning objectives • Broad range of instructional strategies • General overview of the school-wide curriculum and grade levels • Leadership and change theory • Staff development & adult learning principles "Credibility as a good teacher plus added value as a teacher-librarian"
Technical Skills (Resource-based learning) • Use of appropriate technology (including current and traditional technology and computer technology) • Up-to-date knowledge of current technologies • Library user and basic technical skills "Integrating current technology in the curriculum"	• Trainer of technical skills • Selection and operation of automated library systems, technical hardware and software • Advanced skills in information technology • Awareness of emerging technologies • Operation of a learning resources centre "Learn it -- then give it away and move on!"
Personal, Interpersonal and Team Skills • Likes working with kids • Leadership skills • Collaborative team player • Flexible and open to ideas of others • Pleasant, friendly personality • Assertive but not threatening • Approachable and collegial • Coach and peer tutor • Good communicator • Good presentation skills "A spark in the eye for kids and teaching"	• Risk taker • Group facilitator and trainer • Instructional leader • Creator of a collaborative culture • High tolerance for change & innovation • Entrepreneurial/ business skills • Advanced presentation skills • Transformational leader /leader as servant • Delegation and time management skills • Management skills "A spark in the eye for independent lifelong learning"
Values and Beliefs • Equality of educational opportunity • Moral commitment to improving children's learning experiences and meeting students' needs • Resource-based learning philosophy • Commitment to collaborative school cultures • A love of learning and the value of education "Preparing students for a new age"	• The value of the research process & systematic instruction integrated into curriculum for all • The right of all students to be taught to access, retrieve and use information technology • Commitment to independent, lifelong learning • A commitment to the intellectual & physical access to information for all "Building a fire truck as opposed to putting out fires"

Table 3: Mirror Images & Mirror Images Plus of the Work of the Teacher & Teacher-Librarian

about recent research and developments in teacher-librarianship, have advanced skills in instructional development and information technology, and in accessing information and learning resources. They also need an understanding of staff development and adult learning and training so that they can be school leaders in providing training to their colleagues in this area. However, teacher-librarians need to be sensitive to the priorities and skills of their mirror-images (other teachers) and the school administration. Principals and teachers don't need to be persuaded that students need to be taught how to access and effectively use information that is available in many formats, from the world-wide web to traditional print sources. Neither do they need to be convinced that resource-based learning, with its emphasis on the student being actively involved, is appropriate and preferred in today's schools. In our research on classroom practices, 146 teachers in seven schools across four districts were asked to indicate the extent to which (rare, occasionally, frequently) they employed resource-based learning in their teaching. In their responses, 79% responded that they employed it frequently (the range was 54% in one school to 100% in another).

For any one to assume the role of "expert" and approach administrators or teachers with the intent of persuading them to adopt such priorities would be ill-advised since the underlying assumptions of ignorance would be quite rightfully resented. Yet, it is true that neither resource-based learning nor the teaching of the necessary information skills are found in all classrooms. The problem is that school staffs have few images of successful implementation. For example, teachers want professional development in how to integrate computer technology, particularly new information technology, into their classroom practices. In Study Four, the provincial study of school improvement, of all initiatives that promoted school improvement, technology was noted as the most significant by all respondents (administrators in schools and district offices, teachers, students, department of education personnel).

We think that teachers and principals need to observe and be engaged in concrete examples of such integration. For example, teachers generally agree that students should have access to the Internet, that skills surrounding such use should be integrated into the curriculum, but they need to see what it looks like in practice. That is why the image of Ruth (one of the teacher-librarians in Table 2) introducing grade three students in a rural and remote school to a whale expert, located hundreds of miles away at the provincial university, through the use of a computer network, is a powerful example of how technology can be integrated into a science unit:

> I'll tell you an interesting thing we did with the Whale Unit, bringing technology into it. You are familiar with Dr. John Lien at the university?...Well, we got him on-line one day on Stem~net [school computer network] and we brought all the grade three students to the computer laboratory and everyone posed a question to him...they were there when I typed it in he responded to every student so when it came in I took off a hard copy for everybody; the answers to their questions and he sent everybody a new resource information booklet on the whale they had asked information on...they were tickled to death.

It also illustrates that knowing that there is information on the Web about whales is quite a different matter from developing a unit for grade three students which will integrate such information into meaningful instruction. The online interaction with the whale expert was carefully researched and planned, and there was total curriculum integration and follow-up.

Although, in the schools we studied, we were told that the greatest needs for professional development was integration of new information technology in the curriculum, it was clear that school staffs also need examples of how the teacher-librarian can be directly engaged in other forms of resource-based learning. For example, one principal admitted that he had an incorrect perception of the role of a teacher-librarian, that he saw the role as clerical and managerial, until he was "trained" by the teacher-librarian who joined his staff, that through her actions he realized what the role ought to be:

> I walked in and saw the goals and objectives of the unit were all set up and there were two or three teachers working together and the students in about five or six different centres and every day they would just rotate. And I said, "Hey, this is working...you can see learning here."

If teacher-librarians are to survive, we were told, this is where there is a need to show the value of their contributions. They have to show that their work is directly or indirectly related to students' learning outcomes. They may be working with other teachers in the implementation of large, ambitious resource-based units, but, we were also told, this method of connecting the teaching of the skills and the curriculum creates problems. First, they are too time consuming, and even worse, they can be intimidating for some teachers who are not involved in them. We were told of cases where the school's learning resources center and the time of the teacher-librarian was completely scheduled for implementing such units, and the only contact between the teacher-librarian and the classroom for the school year was limited to this intensive three or four week unit. Our understanding of changing school leadership, the needs of students and teachers, and the role of the teacher-librarian has convinced us of the seriousness of this situation. Even a teacher-librarian like Ruth (Table 2), trained in, committed to, and successful with this model, admitted that she has stopped developing new units and has chosen instead to work directly with classroom teachers to integrate skills directly into the classroom instruction on a day-by-day basis (such as in the whale unit reported above). Instead of working in the larger units, more time is being spent supporting teachers and providing the professional support so that the total integration of skills throughout the school can take place. One teacher-librarian saw the task as "building a fire truck as opposed to putting out the fire," and that the aim was to share expertise with the classroom teachers, so that, in some respects, "every single teacher in the school is becoming a Learning Resources teacher." This teacher-librarian has made staff training and development a priority. His school was a national leader in piloting new information technology throughout the curriculum, and most classroom teachers were using computers in their classrooms. As he explained, his role is to learn the new ways of accessing resources, and then train teachers so that they are comfortable using it in the classroom. The teacher-librarian is then free to investigate other emerging technologies which can help teachers teach and students learn. At the time of the interview, this particular teacher-librarian was just beginning to investigate the potential of satellite technology in the senior level geography course. Questions he was considering included: Was satellite technology available to the school? What would it cost? What hardware and software would it require? Would it help the teachers in the social studies department better meet the objectives of the geography course? Further along was the work with a group of teachers on the use of JAVA software and the development of a multimedia laboratory.

It is through total curriculum integration that students will learn the skills they need, and it is to that end that teacher-librarians must work. This will mean a greater emphasis on their role as staff developers and trainers.

Personal, Interpersonal and Team Skills

The "new work of the teacher" requires all teachers to have strong interpersonal and team skills. They are expected to relate well to students, to be collaborative team players, to be flexible and open to new ideas. Principals want teachers with friendly and pleasant personalities, who are approachable and collegial. Current curriculum guidelines stress that teachers be facilitators rather than lecturers, that they be strong communicators and school leaders. This is the mirror-image that all teacher-librarians are expected to have. However, as one principal observed, teacher-librarians are expected to have that, and also the "plus:"

> A learning resource teacher has to be a good teacher. Do they have to have something above the regular teacher? Well, if I'm a regular classroom teacher and I'm responsible for 150 students that come in my classroom during the year, all I have to do is deliver a good program to them so that they get their money's worth. If you are a learning resource teacher, you have to be able to do that but you also have to be able to work with twenty-five other professionals. I could be a super teacher but I don't have to talk to everyone on the staff, but a learning resource teacher may need better interpersonal skills because not are you only going to work with other kids in the library, you have to work with the teachers as well.

As difficult as it may be for some to accept, principals, when looking for a teacher-librarian, place much more emphasis on personal, interpersonal, and team skills than they do on specialized knowledge or technical skills. One principal commented:

> We all have knowledge of the library, we've all used books all our lives and in our training, so that's the narrow based part. It is the leadership and drive you have that makes the library program work or not. I've had people know about the resources but if they can't make people and the children want to go there, then they're useless to me.

Teacher-librarians themselves saw this area as critical for success. One observed that he worked with other teachers 100% of his time. Another commented:

> I have to be approachable, I have to be flexible enough to drop whatever I am doing and listen to somebody, I have to be a good listener. You have to be a super communicator...and test the waters before you change things...You also have to be well organized with your time because it gets busy.

One teacher-librarian related that the need for interpersonal skills is even greater when it involves training teachers to use new information technology:

> If you don't have these skills, your job will become very uncomfortable. I think you have to be able to work with people, get along with people. We're talking about an area now which is very strange. We are talking of training teachers to do things which they never had to do and for the most part they are scared to death of it, and you just have to make them feel so comfortable in doing these new things...Skills in getting along with people is what will help you to train these people. The team effort is what will keep you from going insane.

Teacher-librarians need to understand people (whether teachers or students) and know how to treat them differently depending on their personality:

> You can't approach every one of them the same way...Some of them, you have to joke along with them, others, it's sort of different. You have got to feel it out and know their personality and get a sense of what's the best way to approach them so they are going to be most comfortable with what they are doing.

Personal attributes of the teacher-librarian also set them apart from their mirror-images. In the interview with one teacher-librarian, it was observed that teacher-librarians need to be risk-takers. It was observed that to live life on the edge of new and emerging technologies means that there is a need to take chances, that occasionally you will fall, "If you fall, you have to jump up and go for it," but that you don't give up. Classroom teachers may have a choice in the level of involvement they have in leading edge information technology. The teacher-librarian does not. The position itself requires a commitment to lifelong learning, to constantly upgrading one's skills, to keeping current. Teacher-librarians, therefore, as mirror-images plus, must exhibit a high tolerance for change and innovation.

Values and Beliefs

Teacher-librarians, first and foremost, are teachers. This was apparent in an examination of the values and beliefs they held. As teachers, the most deeply held values are connected to the work of helping children learn. We found that there is no distinction between teachers and teacher-librarians in their primary motivation in teaching—the love of children, illustrated by this comment made by Ruth (Table 2), a primary teacher-librarian who responded to the love and trust of small children, and the joy of helping them learn:

> We were doing an activity today and a little boy, it was the first day he wrote down a sentence by himself. Well that made my day! He was so excited and pleased with his work. It's just this kind of every day thing that I value.

This caring for students exists, but in different manner, in high schools as well, as revealed in this comment from a high school teacher-librarian, Jim (Table 2):

> I believe in people, and helping people. I believe in showing them the way and holding their hand until they get so far and then letting them go. There is an extreme satisfaction already in this position from watching somebody light up when they see the information they are looking for.

Teacher-librarians like Ruth and Jim have a moral commitment to improving children's learning opportunities and they tend to be passionate in their belief in equality of educational opportunity for all. In this, teacher-librarians are mirror-images of teachers.

Principals recognize and appreciate this unique contribution of values and beliefs, and it is reflected in their view of what makes a good teacher-librarian—a combination of being a good teacher (the mirror-image of all good teachers on staff) and someone who provides the extra (the mirror-image plus). It is what one principal referred to as "the spark in the eye." One principal combines love for children and knowledge of technology as the primary characteristics of teacher-librarians:

> I think the most important thing for a teacher-librarian is to like kids. That is the first step. The next thing is to have the latest technical skills to turn a kid on. Teaching isn't what it was like 20 years ago...they should be committed to their job, committed to kids, they must be willing to go the extra mile.

More and more teachers are able to meet this expectation as they become comfortable in using modern technology. Teacher-librarians need to reflect this mirror-image and also bring values and beliefs which, although they may be shared by others on staff, are essential to their role—the belief in and commitment to the process of helping all students learn how to learn; the need for all students to learn the skills which will enable them to become independent, lifelong learners; and commitment to the concept of intellectual and physical access to information for all, not just some, students.

To value the love of lifelong learning for oneself and others, and to hold a passionate belief in providing equal opportunity for all in this quest, is the "mirror-image" of values and beliefs held by teachers and teacher-librarians. However, creating a collaborative learning environment, commitment to independent lifelong learning, and commitment to building "the fire truck as opposed to putting out fires," that is the real "plus" of the teacher-librarian.

The Importance of the Mirror-image in Gaining the Principal's Support

In all the four studies that we used in our analysis for this work, we have found school principals to be extremely influential as educational leaders. They were identified by all stakeholders as the primary source of leadership for the school. In Study One with eight schools and 139 teachers, 72% of the teachers rated the principal as 4 or 5 on a Likert scale of 1-5 ranging from "little" to "a lot." In Study Four with 19 districts, 155 principals, 279 teachers, 223 parents, and 69 students, the most consistently high rating (on the same Likert scale described above) for leadership contribution to school improvement was afforded to school principals by all groups: district office, mean=4.00; school administrators, mean=3.95; teachers, mean=4.00; and parents, mean=4.16. Interview data from all studies clearly indicate that most of the leadership is school based and that, indeed, the principal is the primary source. Even in one school that was struggling with school improvement and where the principal's abilities were questioned by the staff, most recognized that leadership for school improvement came from the principal. One teacher commented, "The principal is attempting to lead the process and is attempting to empower people and to identify strengths and weaknesses, but I don't know how serious [sic] this is being taken."

These studies reveal that principals have a major role to play in the success of the learning resources program. The principals we studied are committed to resource-based learning, are student focused, and eager to engage in initiatives which provide students with lifelong independent learning skills. All eight principals interviewed in Study Three see the integration of computer technology in the curriculum as a priority, and all have made considerable gains in obtaining access to the Internet. The schools range from one of the most advanced in the use of computer technology to ones where it is just beginning, but it is a priority by all, not all have access to the Internet.

Principals have a major influence over the decision to hire and retain a teacher-librarian on staff. One principal was allocated a half-time teacher-librarian by the school board, but had made it full-time by reducing the music teacher to half-time and using the other half for the teacher- librarian's position. She justified her position this way: "there is absolutely no comparison in the value. The school can't function without the teacher-librarian in my estimation"; and she described her work as the "very key" to the improvements in teaching in the school. Principals also have a key role to play in the selection of the type of individual hired in the school. One principal mentioned actively lobbying to obtain the type of teachers (including teacher-librarian) needed and how this was not an easy task: "I'm putting a lot of effort into trying to orchestrate getting people I want here...you have no idea how hard it is...it would take some lobbying." The characteristics principals look for in both teachers and teacher-librarians are similar: They want strong teachers who will make a difference in students' learning in the school. Type of degree or certificate (for example, a Master's degree or a diploma), even technological ability (which was seen by all as important), are much less significant than the qualities of a good teacher.

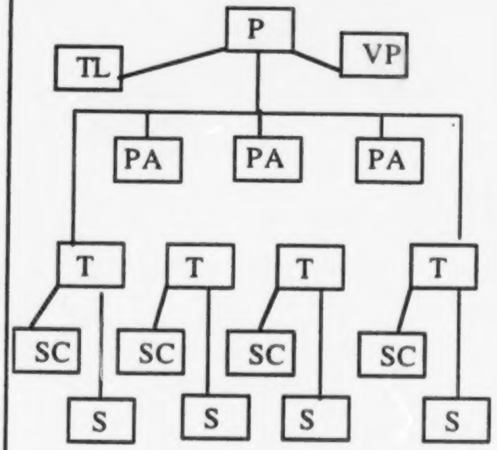
Our research shows that the principal's support can enhance or destroy the teacher-librarian's relationship with the staff, and thus success in the job. As part of Study Three, principals and teacher-librarians sketched an illustration of their perception of leadership in their own schools. These diagrams (Figures 1 - 4) are very revealing. For example, Figure 1 reveals that Principal One saw school leadership in a traditional, hierarchical model. In her interview, she made it very clear that she saw high school teachers as specialists and as quite different in training and orientation from primary or elementary teachers:

> I've always found that high school staffs were different. Their courses are their speciality, they are the experts. Joan is doing global issues which is resource based learning but she is doing all the footwork herself. She has the background, the research, and the education, so she does it herself.

She then commented, "the library teacher we used to have would go to the teachers and offer assistance." It is significant she used the term "library teacher," for it was clear that she expected the elementary trained teacher-librarian to help them use the library and little else, and that high school staffs had to be treated differently from elementary school staffs:

> Our last two librarians were trained in primary, and they expected to see a carry-over from one school to the other but it doesn't happen. It's not that the staff is being malicious, it's just their way of doing things. To force them to do a planned unit won't work for the teachers. It may make the librarian happy. So I told her it's her job to make the teachers happy. If they are happy with the information they are getting, I appreciate it. If she offers help—I may not ask for it—but I appreciate it when she does it. Or if she offers to put up a display, or put something on the bulletin board, I appreciate the helpful but non-obtrusive assistance. I think the teachers feel this way as well.

It is not surprising that Principal One's leadership chart (Figure 1) reveals that the teacher-librarian is off to one side, insignificant, not connected to teachers or any one else except the principal (the "boss"). Her box was the smallest one drawn, and it was added only after Principal One was asked where the teacher-librarian fitted in the diagram. Teacher-librarian One is in Principal One's school, and her drawing (Figure 2) corroborates the interpretation of the principal's view, and illustrates how she perceives her


P
TL
VP
PA
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SC
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Figure 1: Leadership sketch by Principal One*

* Codes for Fig.1-4 are as follows:
P = Principal
TL = Teacher Librarian
VP = Vice-Principal
T = Teacher
SC = Student Council
PA = Parents
S = Students
PL = Public Lib. Bd.

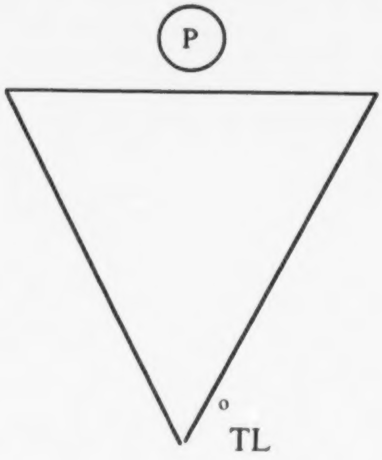

Figure 2: Leadership Sketch by Teacher-Librarian One

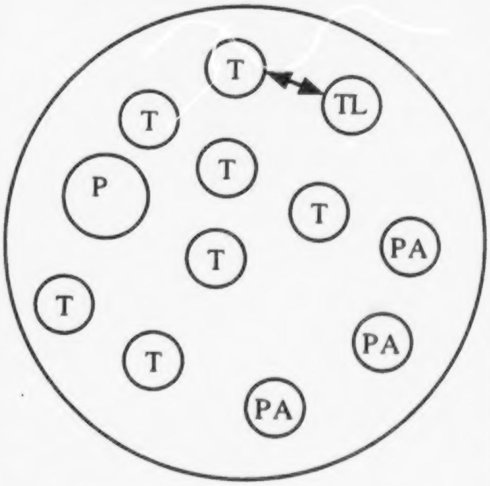
T
TL
T
T
P
T
T
PA
T
T
PA
PA

Figure 3: Leadership Sketch by Principal Two

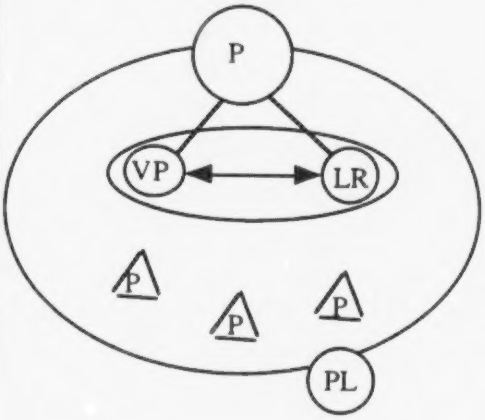
P
VP
LR
P
P
P
PL

Figure 4: Leadership Sketch by Teacher-Librarian Two

role as one of insignificance in a crushing bureaucracy. She is not even in the hierarchy; instead, she is a tiny dot outside it. Trapped in such a situation, Teacher-librarian One is well aware that she does not have the respect and support of her principal. When asked what is required in order to be an effective teacher-librarian, it is hardly surprising that her first comment was: "knowing that the principal backs you is one of the important things."

This situation described above exists in none of the other seven schools in Study Three. In all other instances, the teacher-librarians, regardless of their qualifications are seen by the principals as school leaders. [All teacher-librarians were trained, either having an undergraduate diploma (after degree) or an M. Ed. in School Resource Services.] Within the interviews from Study Three, there were comparisons made to the similarity of the role of vice-principal and teacher-librarian; in fact, Teacher-librarian Two (Figure 4) is also the vice-principal. Several principals indicated, on their leadership charts, that the role is very similar to that of the vice-principal in that it is a key leadership role in the school; and several teacher-librarians compared their position to the vice-principalship, explaining that they work with all staff and are the ones that staff members come to for resources and assistance. In those schools where comparisons were not made to the role of the vice-principal, the teacher-librarian's role was compared to that of a department head. In the schools in which there is a definite effort being made to develop strong collaborative cultures, the teacher-librarian is seen as a strong teacher-leader, one of a number on the staff. The diagram drawn by Principal Two (Figure 3) illustrates a school in which the principal, vice-principal, and teacher-leaders (including the teacher-librarian) work together.

The diagrams and comments of Principal One (Figure 1) and Principal Two (Figure 3) provide an interesting contrast. Principal One believes that teachers have interests quite different from hers:

> One of the things I find is that at some schools the teachers share the workload of building the school profile, but I find with my staff, they like to focus on their teaching subjects and don't like to have that interfered with. So, they want me to do it, which is fine because if I make them do it they tend to get rebellious...They want to teach. They want to be left alone to teach...they want to focus on their subjects and they don't want to be sitting around until six or seven in the evening, talking theory or writing mission statements.

She believes that the school is a hierarchical structure with her as "the boss:"

> I view it [leadership in the school] as a hierarchy, which isn't necessarily as I would like to see it, but I still see me as the center of movement, forcing the staff to take action. They learned last year that I wasn't going to back off. If things had to be done, I was going to do it. I still see myself as being a pusher even when the staff doesn't want to be pushed. If I have a strong vision of something I believe in, I might go ahead with it even if the staff doesn't agree with it. Simply because I believe sometimes they don't make decisions that might be best for the community, but might be best for themselves...My vision is to get Stemnet [computer Internet access] in this school, and whatever I have to do to get it, I will do it.

Being at all times the formal leader, she cannot change roles and become at other times a committee member, a team player. She observed of committees:

> I told the technology committee I didn't even want to be on it, but the committee didn't move it for a year, so I gave it another push. So even though I've attempted to set up these committees, they haven't worked in the sense that they haven't taken ownership of it.

Principal Two, on the other hand, recognizes that at times he must assume a formal leadership role, but in his role as instructional leader, he sees himself as a leader among leaders. The diagram of leadership he drew (Figure 3) reveals that he is comfortable being a team player. The hierarchy is not totally gone, as he revealed in his interview and as he explained his diagram. In his interview he comments:

> I'm plant manager, to a certain extent; and I think I am seen as the person with the final authority. Any problems that they bring to me, we discuss them, and finally I have to make the final decision on what is to happen. The collaboration takes place but I think they do expect me to have some vision, to spark some thoughts—where from here, that sort of thing. We all bring suggestions, and then we explore them—is this a good idea or is it not a good idea? It's not me bringing my vision and imposing it, it's brought in the form of a suggestion and we look at the advantages and disadvantages and collaboratively we make a decision on it. The teacher-librarian fits in as one of the other regular teachers in that group. It's got to be a collaborative process for teachers and teacher-librarian to develop resource-based learning.

This view helps explain why the teacher-librarian in Principal One's school felt so defeated (Figure 2) and why the teacher-librarian in Principal Two's school, who is also the school's vice-principal, (Figure 4) feels so empowered. There is marked difference in the acceptance and support in the two schools. The problem is that teacher-librarians may find themselves in either type of situation. Although new models of educational leadership are emerging, in our research we can see the difficulty some principals have in moving towards the collaborative model. It is also clear that, although the new work of the teacher (and teacher-librarian) has been identified, administrators and teachers have different ideas on how this work can be best accomplished. It is not difficult to find principals like Principal One who view the school as a formal hierarchy, with the principal being the "boss" and teachers being subject area experts with minimal interest or involvement in school-wide matters outside their classrooms. However, it is becoming more common to find principals like Principal Two who has reduced the hierarchical structure to the minimum and is striving to build a sense of community. It is easier for teacher-librarians to work collaboratively in this kind of school but, although it is more difficult, it is not impossible for them to work successfully in a school with a hierarchical structure. In all four of our studies, we have observed teacher-librarians (and other teacher leaders) who are successful in schools where administration still clings to formal leadership roles and lines of authority.

Our evidence leads us to believe that teacher leaders (including teacher-librarians) within a hierarchical system first of all need to understand how the principal operates and must work at developing a relationship with him or her. The support discussed earlier, which is so critical to the success of the teacher-librarian's work, won't come automatically. Teacher-librarian One (Figure 2) became a victim, as her diagram of leadership illustrates. Yet, our interview with Principal One reveals that she values expertise. In describing the characteristics she would look for in a teacher-librarian, she said:

> I would look for a person who accepted the fact that the staff viewed themselves as their own experts, and would be able to infiltrate that, and have techniques to reach the teacher, to sit down with them and be persistent in reaching the staff, to show them the value of his or her assistance.

In fact, the main problem that Teacher-librarian One encountered was lack of credibility as a high school teacher (the mirror-image of the other high school teachers). This was based mainly on the fact that her initial teacher training was in elementary education (so she was not expected to be a good secondary teacher) and she also made it clear to everyone, including the principal, that her experience and preference was in elementary school teaching. To command the respect and the support of Principal One she needs to do two things: first, show that she is capable of teaching high school students; and second, that she has the competencies that the principal wants.

The importance of credibility as a teacher was reinforced in observations and data from other schools as well. Another teacher-librarian, who is a full-time teacher-librarian shared between an elementary and a junior high school is trained as a secondary teacher with most of his experience in the junior high grades. He is an acknowledged leader in his school district (described as "one of the best" by an assistant superintendent) and running successful programs in both schools. Yet, even he reflected on the problem of establishing credibility in the elementary school. He attributed his success at the junior high school partially to his training and background experience:

> I came into this as a junior high school teacher where I knew the curriculum well and I could make connections where even people in the subject areas never saw them. I could make suggestions based on this knowledge, and the teacher would probably agree with me.

He has progressed in this school to the stage where teachers initiate activities with him and there is joint planning and teaching. However, in the elementary schools, it has been a greater struggle to obtain the same degree of acceptance with teachers:

> There is more reticence. I don't know if it was because I was a junior high school teacher, and they knew it. I certainly had to take some time to get to know the curriculum, to figure out how elementary school worked and how people worked together.

He concluded that the elementary school and the junior high school are "two distinctly different cultures," and that as a teacher-librarian he needed to become part of both.

Teachers (including teacher-librarians) and principals can and do move from the levels where they were initially trained and become teachers or administrators at other levels. However, they all have to prove themselves as teachers within the particular school setting in which they are working before they can hope to establish credibility and contribute in a mirror-images plus role. Successful movement across different levels of the school system requires what the teacher-librarian above did: taking time to understand the school, its curriculum, and its special needs. Only then can teacher-librarians have the credibility that will allow them to assume a leadership role and influence what is happening in schools. Their relationship with the principal must be built on an understanding of the importance of credibility. Only if the teacher-librarian is perceived to be credible by colleagues in the school will he or she receive the support of the school principal. Without that credibility and support, as one principal commented, "The teacher-librarian is dead in the water!"

CONCLUSION

Teacher-librarians in a learning organization must function both as members of teams engaged in organizational learning and as leaders of leaders. Images of how to do this are lacking since schools are currently involved in a major paradigm shift in perceptions of school leadership and teachers' work. The images that we have developed from our research are based on teacher-librarians as mirror-images of other teachers and, as well, contributing to the school as a learning organization by being mirror-images plus. In examining the characteristics of the work of teachers and teacher-librarians, we used four major categories: knowledge base; technical skills; personal, interpersonal, and team skills; and values and beliefs. The knowledge base and technical skills provide new mental models for all teachers. The acceptance of resource-based learning, with its emphasis on life long learning is consistent with personal mastery, a key discipline of the learning organization. New information technology also challenges the mental models of all teachers. Our research clearly indicates that teacher-librarians should lead this endeavor. If they are to assume this leadership role, however, they will have to remain on the cutting edge and must be exemplars of personal mastery. In addition, they will need strong personal, interpersonal, and team skills, if they are to engage in and lead the team learning required in a learning school. They will succeed in meeting this challenge only if they are motivated by deeply held values and beliefs regarding the development of a shared vision, one that includes the right of all to develop a love of lifelong learning and the skills to make that possible. This right extends not only to students but also to their teachers for teacher-librarians must increasingly assume a leadership role in staff development and training.

Our findings suggest that if teacher-librarians are to successfully fulfill this role, they must have the credibility that comes from being the mirror-image of other teachers. Only then will they be able to contribute in their "plus" role of the mirror-images plus. Teacher-librarians also need the mirror-image of other teachers in order to gain the respect and support of the school's most influential leader, the principal. Teacher-librarians who recognize their role as a mirror-images of other teachers and as mirror-images plus, and who recognize the need to work with the principal and others toward meeting the needs of students, are beginning to think systemically. We contend that those teacher-librarians who are able to function in this manner are poised to be "pioneering voyagers, reshaping library information centers by engaging future technologies with critical expertise and imaginative joy."

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WE'VE DONE RESEARCH, NOW WHAT? MULTIMEDIA AUTHORING AS A REPORT TOOL

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ABSTRACT

The professional literature and research conclude that new technologies produce either similar or superior results to conventional classroom instruction, arguably because technology has positive effects on students' attitudes towards learning and gives students more control over their learning.

Teacher-librarians, as information specialists, facilitate the student's gathering and understanding of information from all available sources, including electronic. The use of multimedia authoring as a forum for reporting follows logically.

Teacher-librarians, as technology coordinators, can facilitate the many aspects of a multimedia project—working with various-sized groups, deciding on the best use of resources, planning with classroom teachers, timelines, and handling challenges.

IMPACT OF THE NEW TECHNOLOGIES IN EDUCATION

> Students need to be able to read, think and write as they study across subjects...it is essential for students to be able to do these skills together and not only as discrete skills, so that they can apply their abilities to real-life situations in their studies in school...That is why the emphasis in the use of technology in schools [in River East School Division] is on the application of reading (which is called research in the upper grades), writing and thinking." (RESD, 1994)

Expectations of learning outcomes for the new technologies are high in the educational community. Rose and Meyer (1994) believe that New technologies will extend our capacities to communicate effectively—to persuade, inform, entertain, remember, teach, create art and inspire." Conversely, in their extensive joint research, Reginald Gregoire inc., Bracewell and Laferriere (1996) found that: New technologies have the power to stimulate the development of intellectual skills such as reasoning and problem solving ability, learning how to learn, and creativity."

However, in order for technology to leave an impact, it must become an integral part of the curriculum (Eisenberg & Johnson, 1996). Technical skills cannot be taught in isolation and be expected to make a significant difference in improving the learning of students. Technology has to be integrated with the subject at hand—it must become a tool through which students learn rather than the subject students are learning.

Sun Valley Elementary School (River East School Division #9, Winnipeg, Manitoba, Canada) is an example of a school which has embraced and integrated technology in its curriculum with excellent results. For the past five years, the focus has been on the use of technology to develop literacy skills:

e of technology to develop literacy skills:

- to have every student at grade level or above in reading and writing;
- to challenge all students to become independent, reflective learners;
- to support and encourage all students to read and write to their potential;

- to support teachers as they integrate the use of computers into all areas of their teaching.

These goals were tested by Dr. Bev Zakaluk of the University of Manitoba, using the premise: Would the development and use of multimedia for presentations and Internet for communication by elementary students improve reading?" She studied Sun Valley Elementary School students at grade 2 and 5 levels in 1994 and compared them with two control groups from other schools. After five months of study, she found a dramatic improvement in performance. For example, only two out of 100 grade 5 students wrote at grade level or lower, but several wrote at a high school level!

Those results were realized because all classroom teachers, along with the teacher-librarian and resource teachers, are focused on achieving the intended literacy outcomes. Specifically, at the primary level, the emphasis is in the use of computers and CD-ROMs to support and motivate children as they learn how to read and write. Commercial and school-produced Talking Books" support the teaching of reading, among other things. All primary classrooms are equipped with a computer and CD-ROM player.

At the upper elementary level, computer skills are never taught as a subject. However, to facilitate an effective use of computers, students learn keyboarding and basic word processing. Later, advanced skills are taught in the context of the subject the students are learning, or within the research they are doing, on a need-to-know basis. All students are expected to learn those skills. Students compose stories, formal reports, biographies and science reports among others.

WHY USE MULTIMEDIA?

At the upper elementary level, multimedia is used as a form of reporting to enhance student writings. The outcomes observed at Sun Valley Elementary are supported by Heidmann, Waldman and Moretti: "Multimedia technologies enable the creation of environments in which constructivist learning can take place." (1996, p. 301)

he creation process involved in using multimedia authoring as a reporting tool gives students the opportunity to illustrate or explain difficult ideas or concepts in a variety of ways, through a medium flexible and varied enough that it will allow them to express themselves according to their learning styles, interests and personality.

Creating for an audience elevates the multimedia authoring from an activity of computer skills training to an activity of higher level thinking, where strategies and procedures take precedence. Indeed the technical skills developed in multimedia become incidental to the message the author is imparting through the multimedia creation and the solving of problems s/he might encounter in the process.

Thus, it is not so important to learn how to make a QuickTime video, for example, as it is to make it effective so that the audience will understand the meaning of the author's message. The undeniable benefit of having students as authors is that they speak the same language" as their audience. They are likely to have encountered similar challenges in their own learning and therefore should be able to communicate on an equal level with them.

The challenge of the creator, besides ensuring that the message gets across to the reader, is that s/he has to make the multimedia presentation interesting enough that the reader wants to revisit it to gather more information. As well, the text has to be at a level with which the reader can easily interact. And finally, the creation should be a balanced blend of information and visual interest to encourage the reader to revisit it, not so much to try the bells and whistles as to learn from the contents.

Multimedia authoring as a form of reporting is only one of the uses of this diverse technology. Multimedia authoring can serve other worthwhile purposes as discussed below. The versatile ingenious teacher will see the possibilities as s/he becomes familiar with this technology, with the help and guidance of a mentor such as the teacher-librarian.

TEACHER-LIBRARIANS AND TECHNOLOGY

Teacher-librarians are poised to have an impact on technology. The library is the information center of the school and the teacher-librarian its information specialist, including broker in information, facilitator of research, generator of ideas, purveyor of resources, instigator in the search for information. It is a short step from there to chief planner and director in the drive for creation of information resources in the form of multimedia.

Many jurisdictions have embraced technology as a separate entity, delegating its teaching to newly created positions held by technology specialists." This is an unfortunate trend, because teacher-librarians have long had experience in integrating information skills into cooperatively planned and taught units of study. But more importantly, the principal benefit of technology is undeniably that it is an up-to-date source of information, making it the realm of teacher-librarians.

This trend is also unnecessary if technology activities are priorized. There is no need for a technology specialist if the computers are used for drill and practice activities such as for math or spelling games. Since these are no different from activities available in textbooks, a classroom teacher could easily supervise them while a computer technician was available in case of computer breakdown.

However, using technology for creative work such as researching information, and composing and creating multimedia are all higher level thinking skills requiring the guidance of someone like a teacher-librarian, who was most likely involved in the planning stages of the research which preceded those activities.

This opinion is supported by Brown (1990) who suggests that: [Teacher]-librarians assist teachers and students to search out their information needs, critically evaluate the materials they locate, and use technological means to synthesize their findings into new knowledge." It is her belief, as well as that of Eisenberg and Johnson (1996) and Pritchard (1996) that teacher-librarians should not only become proficient at using the new technologies in their role as information experts, but also become leaders in the field, instructing their colleagues, mentoring them in their learning, and guiding them through the electronic sources of information.

In the all-encompassing role as information specialist, the teacher-librarian plays an essential part in assisting students to access, analyze, and organize the data they will find in their searches. The new technologies have the power to stimulate the search for more extensive information on a subject, a more satisfying solution to a problem, and more generally, a greater number of relationships among various pieces of knowledge or data." (Reginald Gregoire inc, Bracewell & Laferriere, 1996). In the dual role as resource person for technology, the teacher-librarian will also provide on-going technical support while helping and guiding students to write their research report in the form of a multimedia document.

Multimedia authoring thus completes the learning circle: students use computers to seek information, then learn how to create multimedia in order to author a research report that will become a source of information for other students.

SETTING UP A MULTIMEDIA REPORT

In November 1996, Sun Valley Elementary's teacher-librarian pressed a CD-ROM for in-house use, containing 10 of the multimedia projects produced by students and teachers over the previous three years. Each project contains student-authored text, student-drawn illustrations, and one or more of: pop-up information windows, photographs, sound (text read-along and/or sound effects) and QuickTime video.

Practical Considerations

Choosing a topic. With a little imagination, any topic can be adapted to a multimedia project. Teachers will often take a unit they are studying in class and use a multimedia format as a reporting tool. "The Metis" was an interesting visual way to represent life in Manitoba in the late 1800s and "Our Solar System" gave an overview of the planets and other stellar bodies.

A grade 6 class studying notable Canadians of the 50s-60s-70s recently created electronic biographical cards" using information and photographs gathered from the Internet to complement that found in print materials.

Appropriate resources are almost non existent for second language studies. French Immersion teachers have long been accustomed to creating their own. As part of their Basic French studies, grade 6 students created simple thematic books which the French Immersion students use to practice reading.

Organizing around your resources. At Sun Valley Elementary, all grade 6 students experience multimedia. This is made easier with the number of computers available at the school. However, it is still possible, if only more time-consuming, for an inventive and flexible teacher to create a project with one computer, which has been done successfully in the past. Setting up the classroom in learning centers, where the computer becomes an activity station is the most workable solution. Some of the possibilities for a project with one computer and 28 students are:

- Enlist the teacher-librarian / technology person to train a small group of students who in turn become mentors for the others in the class. If the project is the result of a research unit cooperatively planned and taught, then the teacher-librarian would be involved in helping the students develop the multimedia;
- Create three small projects setting up teams of 9-10 students each, where each student creates one page of the multimedia;
- Pair the students and have each pair create one page—for one large 14-page project or two 7-page projects.

Timeline/Planning with the whole class. Multimedia projects involving a group of students working cooperatively to create one product require a lot of planning to ensure success because students have to discuss, negotiate and agree on how they will proceed.

Simple thematic books for an intended primary audience are easier to plan and execute and faster to produce. A grade 6 group of 24 students, working in pairs, planned a 12-page book on "*L'hiver*" (Winter) as a Basic French report, the following way:

- as a whole class they brainstormed with the teacher-librarian for fun winter activities;
- they sorted them into four areas: hillside, cabin, ice rink, the woods;
- they chose the three most suitable activities for each area;
- each pair of students picked an activity;
- the three pairs in each area met to discuss common elements within each area in order to draw illustrations that were fairly consistent ;
- the short text was edited with the help of a francophone parent volunteer.

When working on "*Les animaux*" (The Animals) for Basic French, each student in another grade 6 group picked one animal. With the teacher, they had previously agreed on a repetitive format for the text, in the form of This is a (cat, dog). The (cat, dog) is (white, small) It goes (sound)." They worked at one computer, taking turns designing their page and adding the text. When all the art work was finished, they added the sound buttons for the read-along text.

Storyline "talking books"are much more demanding in time and effort. A group of five grade 6 students used the information they gathered for a social studies project and integrated it in a fictional story with digitized photographs as well as drawn pictures to create a 50-page major multimedia project: "*A Week to Remember: A Travelogue*"

- Students brainstormed for the kinds of activities their characters would do and places they would visit during the week.
- Each student picked the day that s/he would write about. The first author started on Monday and composed a story based on the activities previously agreed upon for that day. Then the Tuesday author wrote about the Tuesday adventures, taking into account what had already happened on Monday, as well as some incidents the Monday author included that would impact on the rest of the week. The Friday author predictably had a challenging task.
- The text was cut in segments that would each have their own illustrations.
- The students assigned each other the pictures. They had to develop common parameters for the characters, such as colour of hair, glasses, etc. Although they worked on illustrations on their own, they frequently viewed each other's drawings to ensure continuity.

- When the text and illustrations were completed, they included hot buttons" and sound. In this case, the whole story is read by the authors each taking the part of one of the characters. The reader can read along with the text by activating the sound button on each page.

Storyline multimedia are the most challenging to produce because the common threads that run through the story need to be respected. Cohesion and consistency are very important factors. Such projects give the students a good sense of what authors and illustrators go through in terms of planning and ensuring accuracy when writing a book. Such a project can be a year-long affair, especially if the story is written on an extra-curricular basis rather than for a research report.

A research report proper falls between a storyline book and a simple single-topic thematic book in terms of planning. Some topics lend themselves to writing information pages independent from one another about one subject, such as the solar system or mammals of Canada. Others could present a chronological development, for example, the life-cycle of the frog or the voyages of Columbus. In each case, however, searching tools such as a table of contents or an index should be built in to facilitate finding the information contained within the report.

Storyboards. When they produced "The Field Trip," an interactive choose-your-own-adventure type of story with 16 possible lines of action, a group of students used another planning technique—the storyboard. (see diagram on the following page)

Students and teacher planned on paper, using a web-like diagram, with cells to describe each page of the planned book and arrows to illustrate the relationship between the cells. These arrows would later facilitate inserting the links or hot buttons" which act as page turners.

Producing The Final Project

Format. The title page should provide similar information as found in print materials—the title of the "book," the name(s) of the student(s), the name of the classroom teacher, the name of the producing teacher if it is different, the grade level of the students, the date of copyright and other pertinent information if needed.

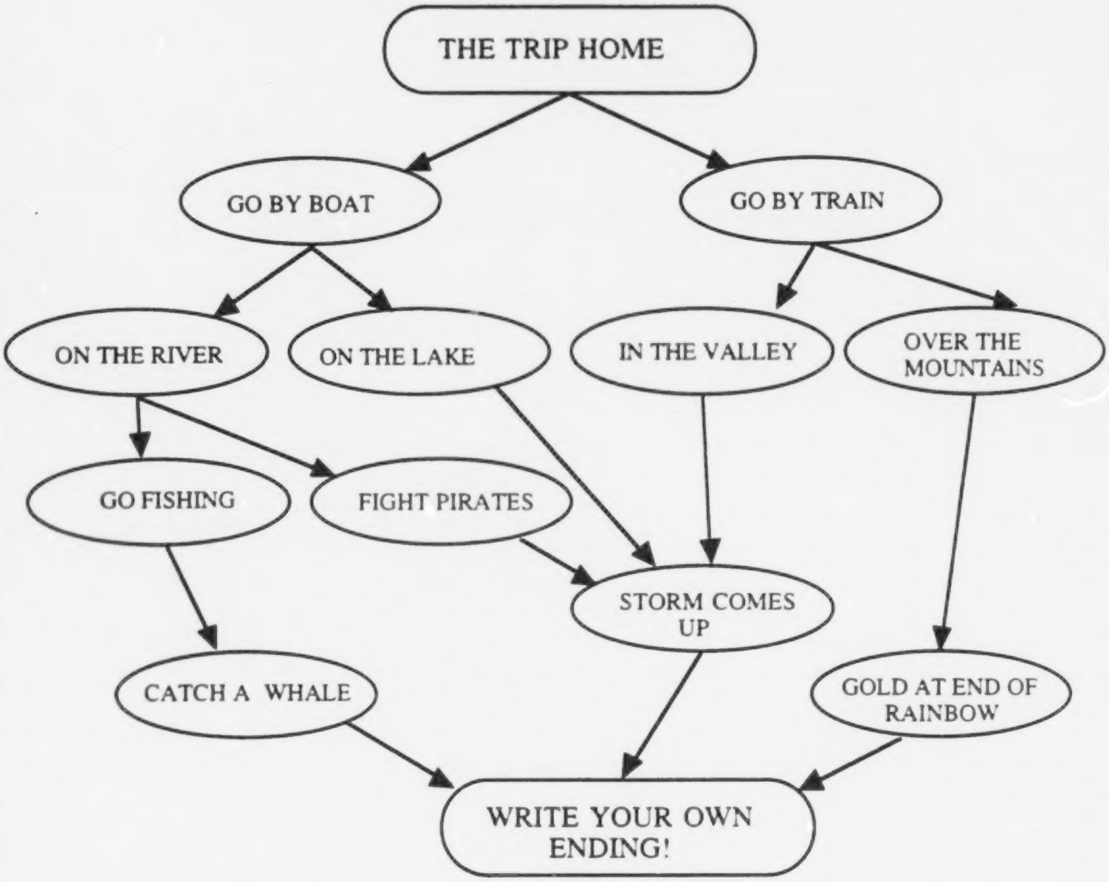
For research projects, a table of contents or index should be included, listing in alphabetical order the topics found within the talking book and allowing users to reach a specific topic with links made directly from this page.

Command bars or control bars are an asset in simplifying the final product. A pre-designed bar placed at the bottom of the page, contains such commands as Quit (taking the user back to page 1), Contents or Main Menu (if suitable, taking the user back to this page), back-pointing arrow and a forward-pointing arrow. This bar should be present on the page before the student creates the illustration.

Recording. Once the pages are ready, the sound can be recorded and the links between pages can be activated. Before recording, students should read the text through a few times for intonation, enunciation and proper rhythm. In the case of conversation, the students sometimes find that the text does not read fluidly and they might edit it to make it sound more natural. Text read for a talking book intended for reading support in the primary grades should be read deliberately and slowly. Such recordings should be no more than 20 seconds in length. If the text is longer, make a second recording for the rest of the text. It is easier for the reader to have short recordings, especially when the intent of the text is to provide read-along practice for young readers.

While a quiet room is a bonus when recording, some groups have recorded successfully while a class was in progress, such as during quiet reading time or an art activity. The whole class can be asked to stand still for the few seconds that the recording takes.

STORYBOARD DIAGRAM


THE TRIP HOME
GO BY BOAT
GO BY TRAIN
ON THE RIVER
ON THE LAKE
IN THE VALLEY
OVER THE MOUNTAINS
GO FISHING
FIGHT PIRATES
STORM COMES UP
CATCH A WHALE
GOLD AT END OF RAINBOW
WRITE YOUR OWN ENDING!

Some Challenges Along the Way. Multimedia projects can challenge the students by presenting them with issues that they had not previously considered. When writing a story which they illustrate, they have to be mindful that the illustration must support the text. This means that for any page where a character appears, s/he must wear the same clothing, for example, and have the same hair style.

In designing a page, the student must ensure that there is enough room to insert the text, that is, balance the length of text and the size of the illustrations. In this instance, a storyboard is helpful in planning.

Of course, the information must be totally accurate. A group of students can be designated to verify the information in reference books. An expert is a great asset in pointing out inaccuracies. For example, in "The Metis," an expert pointed out which colours would have been used in the late 1800s to dye clothing as well as the proper way to hit a bison when shooting it. Students edited their text and illustration accordingly.

CONCLUSION

Multimedia authoring extends the reading, writing and problem-solving skills of the students beyond the basic abilities required in the curriculum, while having fun. It provides a hands-on means of interacting with technology at a higher skills level and learning about this valuable resource through a purposeful activity. Finally, it makes students feel worthwhile about their accomplishments.

While students will readily embrace these new technologies, teachers will need to hone their own technology skills in order to be effective in their integration of the new technologies in their teaching.

Teacher-librarians need to seize the opportunity to play a vital role in the introduction of the new technologies in schools by making themselves indispensable in sharing their unique skills.

APPENDIX

Findings At Sun Valley Elementary

- Students write more in general. For students who still have difficulty with pencil and paper or motor coordination, the idea of working on the computer can be a release.
- Students do more revisions than they would do with pencil and paper. It is much easier and less painful to edit since computer deleting does not leave blanks on the screen the way pencil does on paper where the words used to be. Moving whole paragraphs around is a cinch with cut and paste.
- Students produce much better illustrations. Although they do not have the choice of the medium, whether ink, pastels or paint and it takes dexterity to achieve with a mouse the details that they might achieve with a pencil, editing is so much easier. Many students would set aside an illustration if the house did not look the way they planned, the tree was in the wrong location, or the boat was too big for the lake. The computer house can be redrawn without leaving eraser or pencil marks on the paper, or ripping the paper. The tree can be moved to another location. The boat can be downsized.
- Students' computer skills are improving. The overall quality of the projects students are producing has dramatically improved. They are visually more appealing, and include more extras" such as photographs and enhanced sound effects. Projects previously completed seem to act at gauges to measure new endeavours against, and to surpass.
- Student's problem-solving skills are improving. As they strive to enhance their creations, they typically face hurdles. They learn to think ahead about the consequences of a move, or about how to best achieve what they have in mind. They have to consider what is the most appropriate tool they can use in the tool palette to do what they intend.
- Student's cooperative planning skills are improving. They learn to plan within a group, to respect the opinion of others, to bounce ideas back and forth, to negotiate and to function as part of a collective with a common goal.
- Students feel great about themselves. They create something the rest of the school talks about, their work is used by students in theirs or other classes. They are being looked up to by students who know them or who know that when they reach that grade, they will also be creating some wonderful multimedia project.

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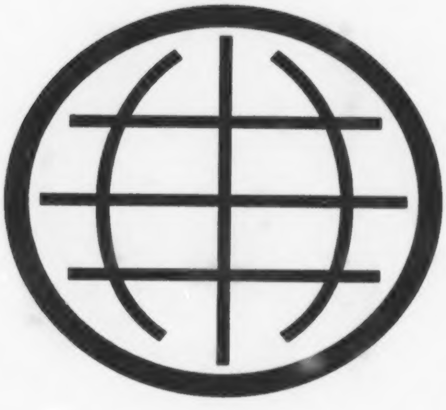
Theme 3

CULTURAL UNDERSTANDING: BRIDGING DIVERSE CULTURE



ACCEPTING TOLERANCE AND DIVERSITY

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ABSTRACT

Exploring diversity instills in children an awareness and respect for themselves and others. Research projects that address stereotyping, race relations, and prejudice within ourselves can be developed through collaboration between the librarian and classroom teacher (who may themselves be of different cultures). These research projects help children to understand that the world is made up of interrelated people; that people must not be judged on appearance or background alone; and that individuals and their contributions to society are of primary importance. These projects encourage children to be more tolerant of others and to savour the rich diversity of the changing world culture.

THE NEED FOR TOLERANCE

We educators are well aware that multicultural education is already an increasingly important and vital component of our educational environmant. In our multicultural society children are constantly exposed to a global information society. Getting along in a changing world is essential and children must be taught to be more tolerant of others.
They must learn to appreciate the rich diversity of America's changing culture.

When children become more tolerant, their self-confidence is increased. This creates the ability to be comfortable and thus learn to interact in all kinds of situations and mix with all different people. This gift of tolerance is found in our hearts. We cannot buy it at a gift or department store. Tolerance is one way to show acceptance and respect for our differences. It becomes the most precious and important gift of love for all—young or old.

We as educators need to create ways and means to guide our children in this globally perplexing and changing world. We know we are imperfect, but we are assured that
global interaction will better children's conflict resolution skills. It will also help to create a more enjoyable and interesting life.

THE ROLE OF READING

Teaching children to celebrate differences and not discriminate is the solution. We must teach our students that prejudice, hatred, and stereotyping are not acceptable. These are behaviors that can be overcome. When children can appreciate and understand their own origin and heritage will this not lead them to appreciate the traditions, customs and beliefs of others? Through reading and research we can explore with our children the rich and wonderful cultures thriving in America today—cultures such as African-American, Arab-American, Japanese-American, Jewish-American, Central American, Chinese-American, Irish-American, Korean-American, Mexican-American, Native American, Puerto Rican-American, and Vietnamese-American. Studying and celebrating differing cultural values, traditions, and family living concepts enriches students with a greater acceptance and understanding of their American heritage and community.

A present and important concern of librarians, public and school, is the promotion of reading. It is the responsibility of every educator to create an atmosphere of reading—a "reading culture." The materials must be well selected in order to attract and entice readers of all kinds. Students will find it harder to resist well selected sources with fascinating photographs and personal narratives such as the *You Were There* autobiographies. These fresh autobiographies that explore the way people live will acquaint readers with the basics of a culture's history and heritage. Students will become aware that their lives and their own historical era are an intimate part of this on-going human saga. Bringing the world to the library develops in children the appreciation of the contributions and achievements for the global people they encounter.

We educators need to implement diverse ways to promote cultural diversity. Implementing ethnic programs—educational and fun projects—with their activities will make libraries the windows to the world. We must encourage students to pursue reading and guide them to examine their attitudes. Will this not broaden their appreciation of others and raise questions to research their beliefs? We first teach children to be tolerant of one person or one group of persons, then we expand from the small groups to larger groups of people. In this way, we will promote cultural diversity and be able to plant the seed of peace.

Truly we must tell our children that racism and prejudice are not acceptable. We must teach tolerance.

PROJECTS AT ILLINOIS STATE UNIVERSITY

The Conceptual Frameworks for Teacher Education at Illinois State University includes statements reflecting the moral and intellectual virtues of its graduates. Among the moral and intellectual virtues are these: a sensitivity toward the varieties of individual and cultural diversity; a respect for learners of all ages and a special regard for childhood and adolescence; and a knowledge and appreciation of the diversity among learners. The Teaching Materials Center collections are a reflection of these virtues.

When teacher education students are introduced to the TMC materials and instructed in their use in a classroom setting, they too are inculcated with these virtues and they learn what materials will best produce the desired learning outcomes.

Materials that promote cultural diversity and tolerance in a positive way are available from many publishers and in many formats—book and nonbook. The non-book materials promoting cultural diversity and tolerance can include such items as videotapes, sound cassettes and sound CDs, CD-ROM products, pictures, posters, games, kits, puzzles, models and realia. Below is a bibliography of sources and a list of publishers.

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Periodicals

Book Links A Booklist Publication, American Library Association
Cobblestones Cobblestone Publishing
Faces Cobblestone Publishing
Multicultural Review Greenwood Publishing Group

Publishers

Chelsea Curriculum Publication, School Division
P.O.Box 5186
Yeadon, PA 19050-0686
800-362-9786

Children's Book Press
6400 Hollis Street, Suite 4
Emeryville, CA 94608
510-655-3395

Culture Catalog
City Lore
72 E. First Street
New York, NY 10003
800-333-5982

Gryphon House Inc.
P.O. Box 207
Beltsville, MD 20074-0207
800-638-0928

Hampton-Brown Books
P.O. Box 223220
Carmel, CA 93922
800-338-3510

Lerner Group
241 First Avenue North
Minneapolis, MN 55401
800-328-4929

Pocahontas Press, Inc.
P.O. Drawer F
Blacksburg, VA 24063-1020
800-446-0467

Polychrome Publishing
4509 N. Francisco Avenue
Chicago, IL 60625-3808

Shen's Books and Supplies
821 S. First Avenue
Suite A
Arcadia, CA 91006
818-445-6958

Smithsonian/Folkways Recordings
9661 L'Enfant Plaza, Suite 2600
Smithsonian Institution
Washington, DC 20560

BEST CHILDREN'S PICTURE BOOKS FROM ABROAD:VALUING OTHER CULTURES

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ABSTRACT

Translated children's books can play an important role in helping children develop an understanding of other people. Outstanding picture books in this specialized genre affirm the fact that each person is unique, but there are universal themes and feelings that every person possesses, regardless of culture or language. A comparison of the past six years of Caldecott Award Winners and outstanding translated children's books provides insights into their similarities and differences. While the Caldecott books all seem to be big, bright, and beautiful, the translated picture books selected for study seem to be diverse in style, medium, and bookmanship.

INTRODUCTION

Children's literature, and especially children's picture books, can be a venue for understanding and valuing our own culture and the culture of others. Valuing another culture is based on the understanding that each person is unique, but that people have universal feelings and needs that bind us together. Literature can allow for this understanding even when language is a barrier. This is accomplished through seamless translations from the original language into the language of another reader.

Translated children's books can provide the opportunity for children to read the literature from other languages and experience the common themes that tie us together; themes such as the need for friendships, love, hope, the healing aspect of humor, fear of the unknown, and the need for safety. According to Hazel Rochman (1995), children's literature can provide children with the themes that can help them move outside their own world or cross cultures. The concept of crossing cultures can be a way to value cultures, to value our likenesses and differences. Paul Hazard in his classic work, *Books, Children and Men* (1967/1937), wrote that children basically ignore national and man-made boundaries in their reading and develop a "universal republic of childhood." Long-time editor and Arbuthnot Award winner Margaret McElderry continues to publish translated children's books because readers will develop "...an interest in the wider world and an impetus to follow that interest throughout their lifetimes." (McElderry, 1987, p. 245). The concept of a "universality of humanity" through children reading the books of other cultures and languages has been put forward by a number of writers and researchers. (See Briley,1991; Hearne,1996, 1991; Jobe, 1987; McElderry,1994; White, 1993, 1992).

However, there are barriers that even the finest translations are unable to overcome. Illustrations in children's books can provide the concrete visual experiences that can work with translations to bridge the gap between cultures. Oittinen (1993) described the process of translating children's picture books as a "many-faceted phenomenon" that includes the text as well as the illustration, but that is primarily focused on the making of a readable story. Outstanding illustrated children's books that are true to a culture, its people and heritage in both text and illustrations, and that are "readable" can help children value another culture at an early age (Diakiw, 1990). Translated children's books or international literature, as it is sometimes called, can assist children "develop a bond of shared reading experiences with children of other languages" (Lynch-Brown & Tomlinson, 1993).

The United States has a proud heritage of producing outstanding picture books. The Caldecott Award and Honor Medal Books as well as the picture books named as Notable Children's Books are evidences of that quality. Too often, however, we have excluded translated children's books from our collections and readings because we perceive that these books are different from our books or because they do not "travel well." Yet, who of us would dare suggest that the translated works of Hans Christian Andersen, the Brothers Grimm, or Charles Perrault, illustrated by a host of outstanding illustrators, be excluded from our children's literature. Neither in the past nor in the present do we in the U.S. have the market cornered on all of the best writers or the best illustrators in the world. And, by excluding the outstanding literature of other languages, we are saying by our actions that we do not value the literature of other languages and cultures.

How do the best translated children's picture books compare to the best picture books originally written in English and published in the United States? First, we must look at definitions of picture books and children. Picture books are unique because the content does not determine their definition, but the format is the determining factor (Cullinan & Galda, 1994). Any book of any genre can be a picture book. Whatever the content, if illustrations are equal or dominant partners with the text, the result is a picture book. Who are children? According to the American Library Association for Children, children are considered those from ages 0 through 14. This age group is used for both Batchelder and Caldecott Award consideration.

SELECTION OF BOOKS FOR COMPARISON

The majority of some 5000 children's books published annually by U.S. publishers are picture books (Bowker, 1996; Huck, Hepler & Hickman, 1993). According to White and Link (1997), more than 50% of the positively reviewed translated children's books published in 1996 were picture books. Horning, Kruse, and Schliesman (1995) indicated that most of the children's translations that they received for review were picture books. It is difficult to compare such small numbers of translated picture books with U.S. picture books, but the process of comparison may bring us to some interesting conclusions.

The Caldecott Award is given to the outstanding illustrated book published in the previous year. This book must be original, unique, have a unity of illustration with story, and be a book for children. As the criteria demand, each book is evaluated on the unique or exemplary use of the particular medium or media (Staerkel, Hackett, & Callaghan, 1994). The Caldecott Medal Books honored between 1992 and 1997 were selected for comparison.

There is no similar picture book award for translated children's books, therefore, books selected for comparison were from among those receiving special recognition in other ways. The Batchelder Award is given annually to the publisher of the outstanding children's book translated from another language into English and published in the United States. Books of all genres, except for fairy tales, are eligible for Batchelder consideration. Picture books may be considered, but the text must be as important as the illustrations (Association for Library Service to Children Board, 1987). It becomes the responsibility of each Batchelder Award Committee to interpret this picture book rule. Three picture books have been awarded Batchelder Honor Awards within this decade. These books were included for comparison: *Anne Frank: Beyond the Diary*, (1993); *The Princess and the Kitchen* (1993); and *Star of Fear, Star of Hope* (1995).

In addition to the Batchelder Award, the Hans Christian Andersen Award is given every two years to the outstanding writer and illustrator from around the world. These persons are nominated by their national section of the International Board on Books for Young People (IBBY) for these honors (Garrett, 1994). However, other than the illustrated books by 1984 Hans Christian Andersen Award winner Mitsumasa Anno, and the 1990 winner, Lizbeth Zwerger, we see little of the other Hans Christian Andersen Award-winners' books being translated. One book illustrated by Anno (1992) *The Animals*, and one by Zwerger (1995) *Christian Morgenstern*, as well as a 1997 Children's Notable Book, *Maples in the Mist* (1996) were included in the selected translated picture books to compare as a group with the Caldecott books.

COMPARISON BETWEEN CALDECOTT AND OUTSTANDING TRANSLATED PICTURE BOOKS

The 1992-1997 Caldecott Medal Winners, their genres and artistic media include: 1992—*Tuesday* by David Wiesner, a fantasy in watercolor; 1993—*Mirette on the High Wire* by Emily Arnold McCully, realistic fiction in watercolor; 1994—*Grandfather's Journey* by Allen Say, realistic fiction in watercolor; 1995, *Smoky Night* by Eve Bunting, illustrated by David Diaz, realistic fiction in acrylic paintings set in mixed media collage backgrounds; 1996—*Officer Buckle and Gloria* by Peggy Rathmann, realistic fiction in watercolor and ink; and, 1997—*Golem* by David Wisniewski, a folktale in cut-paper.

When one looks at the Caldecott Medal Books between 1992-1997 as a group, one sees bold and brilliant colors and oversized illustrations; and, despite each story being unique, there seems to be a commonality among them. Perhaps it is in the total bookmanship. Five of the six illustrators used watercolor as a medium and four of the six illustrated works of realistic fiction (Association of Library Service to Children, 1996).

Batchelder Books are often thought of only as works of historical fiction in which the subject is the Holocaust and World War II. It is true that there are a number of Batchelder Award books that are works of historical fiction about these subjects. However, to lump all Batchelder and translated books into this mold provides an inaccurate view of translated children's books. The following translated children's picture books were selected for comparison and include the language, genre and artistic medium of each: 1992—*The Animals: Selected Poems*, translated from the Japanese, poetry in cut-paper friezes; 1993—*Anne Frank: Beyond the Diary* by Rian Verhoeven and Ruud van der Rol, translated from the Dutch, an information book illustrated with photographs; 1993—*The Princess and the Kitchen* by Annemie and Margriet Heymans, translated from the Dutch, a fantasy in colored chalk and black and white drawings; 1995—*Star of Fear, Star of Hope* by Jo Hoestlandt, translated.from the French, historical fiction in colored chalk; 1996—*Maples in the Mist* translated from the Chinese, poetry in watercolor; and 1995—*Christian Morgenstern: Lullabies, Lyrics and Gallows Songs*, translated from the German, poetry in watercolor.

Picture books by illustrators from abroad often have a different look from the U.S. books. Because these books are from a number of countries and cultures there is more diversity in illustrations, style, and in the look of the book, or bookmanship. An identifiable look does come from the same illustrator. Just as we can identify the style of a Chris Van Allsburg or a James Stevenson book, so too can we recognize the small, detailed watercolor style of Anno or the slightly off-centered, colorful watercolor of Zwerger. At times there seems to be a surrealistic look to illustrations from abroad, at other times a gentle look and feel, but certainly not a homogenized look.

What are some of the similarities and differences between these two select groups of books—Caldecott Award winners between 1992-1997 and the selected translated children's picture books? One of the best places to go to critique books is to their intended audience, children. In 1996 each of the Caldecott books and the translated books selected for study were shared with children between the ages of five and eleven. As expected, their reactions to the Caldecott books were very positive. The big bright beautiful illustrations which blend seamlessly with the stories provide the "just right" book for check out or a read-aloud story. One second grader said, " They [the illustrations] make me seem like I am in the book; they help put pictures in my head that I make move." However, reactions to the six translated children's books were more varied: "Wow!" "Cool!" "How sad." "Strange!" "Where are the Spanish translations?"

Adults who compare these selections come up with some of the same conclusions. What we see in the Caldecott books are pictures that are large, bold, and colorful. As one person said, "in your face." As a group, these books are illustrated in bold and brilliant colors, with oversized illustrations. Each is unique, and different from the ordinary picture book, yet as a group there seems to be a commonality among them. This commonality seems to say, "Made in the U.S.A!"

Librarians and teachers were asked for their impressions of a large group of translated children's books. They pointed out the odd, surrealistic style of many of the books. They also noted the wide diversity of styles ranging from the small vignette type (Andersen, *Twelve Tales*, 1994) to the surrealistic style (Lucht, *The Red Poppy*, 1995) and the unusual fonts (See Besson, *October 45*, 1995).

LANGUAGES, GENRES, AND SUBJECTS COMMON TO TRANSLATIONS

In order to better study and report on translated children's books, a database of translated children's books that have been reviewed in major review journals is maintained (Link & White, 1977). Reviews are obtained from *Booklist*, *School Library Journal*, *Horn Book*, and the *The Bulletin of the Center for Children's Books*. These journals are some of the primary review sources used by school and public librarians in collection development (Bowker, 1996). Also, annual review sources that make it a point to review outstanding translations, such as *CCBC Choices*, are checked to verify if any outstanding books were missed by the other review sources. An effort is also made to read each of the translated children's books and obtain the Library of Congress MARC record. The MARC record is used to verify the language of translation, subject headings, and series title. The genre and picture book or picture storybook status is determined by reading the book. The data are entered into a computer database for greater ease and accuracy in data compilation.

Language was the first characteristic that is determined. If there is a doubt about the language or if it was unclear, the MARC record verified it in most cases. In a few instances the MARC record identified it as translated, but did not provide the original language or declared it to be "undermined." A linear look of the languages translated over a period of time can be a social, financial, and political commentary on our world. Note the decreases in a number of countries that once provided a larger number of translations. Table 1 lists the languages of translated children's books selected for study between 1992-1997.

Table 1
Languages of Translated Children's Picture Books Receiving Positive Reviews

Language	1992	1993	1994	1995	1996*	Total
Afrikaans	0	0	1	0	0	1
Chinese	0	1	1	0	2	4
Croat	0	0	2	0	0	2
Danish	5	1	3	1	0	10
Dutch	0	3	2	3	3	11
Finnish	0	0	1	0	0	1
French	14	11	11	11	7	54
German	21	19	19	26	21	106
Hebrew	0	1	0	4	1	6
Hungarian	0	0	0	0	1	1
Iroquois	0	1	0	0	0	1
Italian	0	4	4	1	1	10
Japanese	9	6	4	3	1	23
Korean	0	1	0	0	0	1
Norwegian	2	1	1	0	1	5
Polish	2	0	0	0	0	2
Portuguese	0	1	0	0	0	1
Russian	3	3	2	2	2	12
Sango	1	0	0	0	0	0
Spanish	3	0	3	4	2	12
Swahili	1	0	2	0	0	3
Swedish	7	5	4	3	3	22
Turkish	0	0	1	0	0	1
Ukraine	0	0	0	1	0	1
Viet	0	1	1	0	0	1
Yiddish	1	0	0	0	1	2
Undeter	0	0	0	1	1	2

Note. Data for 1996 are incomplete as reviews for 1996 books are still being published in selected journals.

Genres of translated books receiving positive reviews in selected journals reflect some of the major genres in vogue in children's picture books published in the U.S. The most popular genres of translated books seem to be realistic fiction, fantasy, information books, and fairy and/or folklore. Picture books, which can be the format for any genre, accounted for 48% of selected translated titles between 1992 and 1996. Of the 1996 positively reviewed titles, 52% were picture books. See Table 2 for genres of translated books.

Table 2

Genres of Selected Translated Children's Books in Review Journals

Genre	1992	1993	1994	1995	1996*
Fairy & Folklore	15	14	7	7	7
Fantasy	1	6	2	2	13
Realistic Fiction	32	29	32	20	19
Historical Fiction	0	1	3	7	3
Information Biography	17	10	19	10	7
Poetry	6	3	0	1	2
Religion/Legends/Myth	2	1	0	1	2
Classics	7	7	4	5	3
Picture Books	39	24	27	27	27
Series	7	6	3	7	3

Note. Data for 1996 are incomplete as reviews for 1996 books are still being published in selected review journals.

Subjects of translated children's books closely parallel children's books published in the U.S. The probable exceptions seem to be that more literature dealing with the subject of World War II and the Holocaust are found in translated children's books. Subject headings were taken from the annotated children's subject headings list produced by the Library of Congress and indicated in MARC records. See Table 3 for a listing of subjects of selected translated children's books.

Table 3

Subjects of Selected Translated Children's Books

Year	Major Subject Headings (more than three listings)
1992	Animals (Specific)—Fiction Animals—Poetry Fairy tales/Folklore (Specific Country) Friendship—Fiction Noah's Ark
1993	Biography—(Specific Person) Dogs—Fiction Fairy tales/Folklore—(Specific Country)

	Family—Fiction
	Friendship—Fiction
	Holocaust Survivors—Fiction
	War—Fiction
1994	Animals (Specific)—Fiction
	Countries—(Specific)
	Dinosaurs
	Fairy tales/Folklore (Specific Country)
	Friendship—Fiction
	War—Fiction
1995	Animals (Specific)—Fiction
	Art & Art-Fiction
	Biography—(Specific Person)
	Fairy tales/Folklore (Specific Country)
	Family life—Fiction
	Friendship—Fiction
	Holocaust survivors—Fiction
	Human Behaviors—Fiction
	World War II—Fiction
1996*	Animals (Specific)—Fiction
	Art
	Artists (Specific Names)
	Fairy tales/Folklore (Specific Country)
	Jews/Holocaust

Note. Subjects for 1996 are incomplete as reviews for these books are still appearing in selected review journals and all books have not been examined.

Reviews by major review sources continue to place books in translation before children's librarians. The range of positive reviews from the selected journals ranged from 73 in 1992 to 60 in 1996. However, reviews for 1996 books are still appearing in journals, so the data for 1996 were incomplete. See Table 4 for number of positive reviews by year.

Table 4

Translated Children's books Receiving Positive Review in Selected Journals

Year	BCCB	Booklist	Horn Book	SLJ	Totals
1992	3	23	3	44	73
1993	10	23	9	34	76
1994	9	28	4	15	56
1995	14	30	7	34	85
1996*	12	13	4	31	60

Note. Data on 1996 translated children's books are not complete.

In order to provide the best in translated literature for children, we must be aware of some of the best translations. Sometimes these translations will provide us with a new or enriched view of peoples who speak a other than our own. At other times we may receive an outstanding translation that does not reflect another culture. But, if it were not for the fact that it was translated and language published, English-speaking and reading children would be deprived of that book. Naomi Shihab Nye (1994) said in her introduction to *This Same Sky: A Collection of Poems From Around the World*, "Those of us living in the U.S. often suffer from a particular literary provinciality, imagining ourselves to be the primary readers and writers of the planet." As rich a heritage of children's literature as we have in the United States, it is truly a very brief history. As Nye contends, we are not the primary readers and writers of the planet. We need translations to help us value the literature and cultures of other languages.

RECOMMENDED LIST OF TRANSLATED CHILDREN'S BOOKS

The following outstanding books have received at least two favorable reviews, been named as a Children's Notable Books, or received an award. The bibliography is organized by year with approximate interest levels and genres listed.

1996 Outstanding Translated Children's Picture Books

Bittner, W. *Wake Up, Grizzly!* Illustrated by Gustavo Rosemffet. Translated from the German by J. Alison James. North-South, 1996. (Ages 4-7) Picture Book/Realistic Fiction

de Beer, H. *Little Polar Bear, Take Me Home!* Illustrated by the author. Translated from the German by Rosemary Lanning. North-South, 1996. (Ages 5-8) Picture Book/Fantasy

Grimm, Jakob. *The Six Servants*. Illustrated by Sergei Goloshapov. Translated by Anthea Bell. North-South, 1996. (Ages 8-11) Picture Book/Fairy tale

Grimm, Jacob & Grimm, Wilhelm. *Little Brother and Little Sister*. Illustrated by Bernadette Watts. Translated by Anthea Bell. North-South, 1996. (Ages 5-8) Picture Book/Fairy tale

Kharms, Daniil. *First, Second.* Illustrated by Marc Rosenthall. Translated from the Russian by Richard Pevear. Farrar, 1996. (Ages 5-8) Picture Book/Fantasy/Information

Landström, Olof & Lena. *Boo and Baa in a Party Mood* and *Boo and Baa in Windy Weather*. Illustrated by the authors. Translated from the Swedish by Joan Sandin. R&S Books, 1996. (Ages 3-6) Picture Book/Fantasy

Maples in the Mist: Children's Poems from the Tang Dynasty. Illustrated by Jean and Mou-sien Tseng. Translated from the Chinese by Minfong Ho. Lothrop, 1996. 1996 ALA Notable Book. (Ages 7-12) Picture Book/Poetry

Out of the Dumps: Writing and Photographs by Children from Guatemala. Edited by Kristine L. Franklin and Nancy McGirr. Translated from the Spanish by Kristine L. Franklin. Lothrop, 1996. Booklist Editor's Choice 1996. (Ages 10-14) Picture Book/Poetry/Children's writings

Popov, Nikolai. *Why?* Illustrated by the author. Title translated from the German. North-South, 1996. (Ages 8-12) Picture Book/Fantasy

Pushkin, Alexander. *The Tale of Tsar Salton.* Illustrated by Gennady Spirin. Based on a translation by Pauline Hehl. Dial, 1996. (Ages 7-9) Picture Storybook/Fairy tale/Folklore

Schami, Rafik. *Fatima and the Dream Thief.* Illustrated by Els Cools & Oliver Streich. Translated by Anthea Bell. North-South, 1996. (Ages 6-9) Picture Storybook/Fairy tale

Schweiger-Smi'el, Itzhak. *Hanna's Sabbath Dress.* Illustrated by Ora Eita. Translated from the Yiddish by Razi Dmiiel, et al. Simon & Schuster, 1996. (Ages 4-6) Picture Book/Fantasy

Weninger, Brigitte. *Ragged Bear*. Illustrated by Alan Marks. Translated from the German by Marianne Martens. North-South, 1996. (Ages 4-8) Picture Book/Fantasy

Weninger, Brigitte. *What Have you Done, Davy?* Illustrated by Eve Tharlet. Translated from the German by Rosemary Lanning. North-South, 1996. (Ages 4-8) Picture Book/Fantasy

1995 Outstanding Translated Children's Picture Books

Anno, Mitsumasa. *Anno's Magic Seeds.* Illustrated by the author. Translated from the Japanese. Philomel. 1995. (Ages 4-9) Picture Book/Information

Beeson, J. (1995). *October 45: Childhood Memories of the War*. Translated from the French by Carol Volk. Designed by Rita Marshall. Harcourt, Brace, 1995. (Ages 9-12) Picture Storybook/Historical Fiction

Chekhov, Anton. *Kashtanka.*. Adapted from a new translation by Ronald Meyer. Illustrated by Gennady Spirin. Harcourt Brace, 1995. (Ages 6-10) Picture Book/Realistic Fiction/Classic

Hoestlandt, Jo. *Star of Fear, Star of Hope*. Illustrated by Johanna Kang. Translated from the French by Mark Polizzotti. Walker and Company, 1995. 1996 ALA Notable Book. (Ages 8+) Picture Book/Historical Fiction

Kodama, Tatsuharu. *Shin's Tricycle.* Illustrated by Noriyuki Ando. Translated from the Japanese by Kazuko Hokumen-Jones. Walker, 1995. (Ages 9-14) Picture Book/Historical Fiction

Landström, Lena. *Will Goes to the Beach*. Illustrated by Olof Landstr_m. Translated from the Swedish by Carla Wiberg. R&S Books, 1995. (Ages 3-5) Picture Book/Realistic Fiction

Lucht, Irmgard. *The Red Poppy.* Illustrated by the author. Translated from the German by Frank Jacoby-Nelson. Hyperion, 1995. (Ages 5-9) Picture Book/Information

Morgenstern, Christian. *Christian Morgenstern: Lullabies, Lyrics and Gallows Songs.* Selected and illustrated by Lisbeth Zwerger. Translated by Anthea Bell. North-South Books, 1995. (Ages 5-9) Picture Book/Poetry

Ruepp, Krista. *Midnight Rider.* Illustrated by Ulrike Heyne. Translated from the German by J. Alison James. North-South Books, 1995. (Ages 7-12) Picture Storybook/Realistic Fiction

Scheffler, Ursel. *Rinaldo on the Run.* Illustrated by Iskender Gider. Translated from the German by J. Alison James. North-South Books, 1995. (Ages 5-9) Picture Storybook/Realistic Fiction

Storm, Theodor. *Little Hobbin.* Illustrated by Lisbeth Zwerger. Translated by Anthea Bell. North-South Books, 1995. (Ages 5-8) Picture Book/Fantasy

1994 Outstanding Translated Children's Picture Books

Andersen, Hans Christian. (1994). *Twelve Tales*. Selected, illustrated and translated from the Danish by Erik Blegvad. McElderry/Macmillan, 1994.

Björk, Christina. *Big Bear's Book by Himself*. Translated from the Swedish by Joan Sandin. R&S Books, 1994. (Ages 7+) Picture Book/Information

Buchholz, Quint. *Sleep Well, Little Bear.* Illustrated by the author. Translated from the
German by Peter F. Neumeyer. Farrar, 1994. (Ages 5-8) Picture Book/Fantasy

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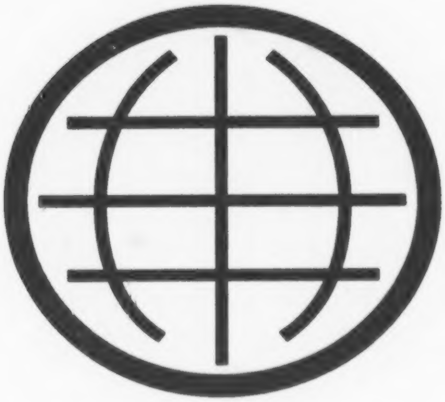
Theme 4

CULTURAL EXPRESSION: CREATING BRIDGES OF MEANING



INFORMATION FOR ALL: RESOURCE GENERATION AND INFORMATION REPACKAGING IN NIGERIAN SCHOOLS

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ABSTRACT

Is a developing country like Nigeria information rich or information poor? The first impression is of scarcity, but a closer examination reveals unexplored riches. There is a wealth of information in the oral tradition, but it is not found in schools and libraries. There is information in libraries, but language and reading level make it inaccessible to school children. What role might libraries play in resolving the information dilemma in Nigerian primary schools? This paper explores the use of resource generation from oral tradition, and information repackaging from oral and written sources, in creating an information and knowledge rich environment for all children.

INTRODUCTION

Is a developing country like Nigeria information rich or information poor? Certainly the first impression is of poverty. The information superhighway as exemplified by the Internet and e-mail is only beginning to enter high level institutions in major centers. Even at the universities, most work is done without the aid of computers. Turning to more traditional information sources, the terms "book hunger," "book famine," and "bookless societies" have been used to characterize Africa in recent years. Indigenous publishing, just trying to find its feet, has been badly hit by the deteriorating economy, while the thin stream of foreign books has almost dried up. Libraries are few and far between. Turning to the schools, especially the primary schools which are the focus of this study, one finds an almost total lack of teaching/learning materials. The situation is such that Sturges and Chimseu (1996) suggest we talk, not of "book famine," but of "information famine," for there are problems with obtaining information in any form, be it print, electronic, audiovisual or oral. Nigeria would certainly appear to be information poor.

And yet, there is perhaps another side to the picture. Could Nigeria in any way be information rich? It has been argued that many development policies for Africa have failed, not because of a lack of information brought in from outside, but because of the failure to make use of information from inside. There has, according to Sturges, Mchombu and Neill (192) been an "almost willful disregard of the information resources available in the continent." (p. 12) These neglected resources include oral indigenous information concerning the natural and social environment, occupations and cultural arts, societal norms and values, as well as varied forms of oral literature. The indigenous knowledge base also includes locally-produced print materials in many forms: books and periodicals, but especially the neglected resources of gray literature—technical reports, conference papers, pamphlets, flyers, etc. Perhaps there are ways we can capture and utilize this indigenous knowledge base, for development—and for education.

INFORMATION FOR ALL

According to Article 9 of the Universal Declaration of Human Rights, "everyone has the right...to seek, receive and impart information and ideas through any media." Several authors (Sturges, Mchombu & Neill, 1992; Totemeyer, 1994; Rachnema, 1982) have stressed the need to expand our vision if we are to provide information for all. For "any media" include print, electronic and audiovisual media—and the human voice which is still the cheapest and most natural mode of communication (Totemeyer, 1994). too often we assume a linear progression from oral to print to electronic media, or we regard literacy as a prerequisite for the communication of information. Rahnema (1982) suggests we shift emphasis from "reading the *word*" (i.e., literacy and written media) to "reading the *world*," making use of any appropriate medium in our quest for understanding.

For Africa these appropriate media are often likely to involve oral communication. Chakava (1984) and Ogunsheye (1976), among others, have noted that most Africans derive more pleasure from oral and performing arts—talking, singing, dancing, and dramatizing—than from the rather private and solitary activity of reading. African culture, with its emphasis on the oral mode and communal nature of learning has attuned people to learning more through the "ear" than through the "eye". Totenmeyer (1994) gives the example of Namibian university students, who are more apt to internalize an important lecture by reconstructing and discussing it as a group than by taking notes or recording it on tape. In addition to this cultural affinity, a large proportion of the population in Nigeria and many African countries has not acquired literacy and is thereby cut off from information in written forms. The multiplicity of languages, underdeveloped infrastructure and poverty, all complicate the provision of print and electronic media for meeting people's information needs. By exploring appropriate oral means of information transfer, whether through direct communication or audio technology, along side all other possible media, we can both extend the information available to us and make information more accessible to all.

RESOURCE GENERATION

While the value of the indigenous knowledge base may be acknowledged, capturing and repackaging it in appropriate forms for use is a major challenge. First, it must be recognized that some loss results when information is removed from its elastic "human envelope" and put in more durable static forms. Yet this process of information capture fosters its preservation and enables it to be used more widely.

Early projects of resource generation from oral information sources focused on rural adult learners, who are cut off from information in traditional library resources due to lack of literacy. As early as 1972, Oyeoku (1975) opined that: "The initial emphasis of African libraries need not be on the printed word. It is quite feasible and more meaningful to start a library in a rural community with miles of tapes of the people's folklore, music and culture." (p. 280)

Oyeoku proposed a program for generating resources in stages, whereby librarians would collect oral materials from the people to create a community library of tapes. These could also be transcribed to provide familiar and appealing reading materials for new literates. He also envisioned using this sound library to prepare learning materials for primary school children. Operation Lecture Publique of Mali (Rahnema, 1982; Mali, 1992) implemented this idea with a system of sound libraries recording and making Mali's oral tradition available throughout the country.

A small-scale local example of information capture is provided by the second presenter's oral information project with graduate students of library science. The students generated information from interviews with rural people on subjects such as making of black soap, treatment for measles, weaving of akwete cloth and preparation of local food condiments. The information so generated was both recorded on audio cassette and transcribed in written form. Specimens and photographs of the important elements were also included, creating multimedia resources for an oral archive. Such resources might also be adapted for classroom teaching in primary school subjects such as social studies, science, and home economics.

INFORMATION REPACKAGING

Information resources may not be accessible to users in their original form for a number of reasons, chief among these being illiteracy of users, the language of presentation, reading level, or differences in intended audience. In these cases, information must be "repackaged" to suit the particular users. Information repackaging involves extracting relevant information from a variety of sources, simplifying or translating materials into the language of the target population, and presenting information in oral, visual, or a combination of media.

Aboyade (1984) used this concept in her RUDIS project, in which a research team from the University of Ibadan extended information services to the villagers of Badeku. While the team took some information materials with them, they also responded to the needs expressed by the people. Repackaging took the form of giving oral information on agriculture, health and government policies, but also of reading stories or football match reports to the villagers.

Surges and Chimseu (1996) considered the potential of gray literature as content source material for repackaged development messages in Malawi. They described several small projects of the public library service and relevant government ministries in which information culled from technical reports, conference papers and government documents was put in simplified summary form for extension workers to communicate to rural dwellers using the local language. Oral messages were supported by a wide variety of written and audiovisual materials produced by the project, such as booklets, posters, puppet shows, and t-shirts.

Our focus in this paper is to explore whether these approaches for providing information to adults might also be utilized with school children. Having looked at previous work, we now turn to the setting for our project.

THE NIGERIAN EDUCATIONAL SETTING

Indigenous Nigerian education was carried out by members of the family and community, using predominantly informal methods reminiscent of modern educational philosophy and practice. The variety of methods used include oral presentation through telling stories, recounting history, posing riddles; guided observation and instruction in the context of daily life; demonstration and hands-on experience as in apprenticeship. Education was thoroughly grounded in the culture and aimed at developing fully productive citizens to meet varied societal needs. The modern school system, however, did not evolve from this base. Western-type education was introduced by Christian missionaries in the late 19th and early 20th century. Most schools were run by missions, receiving some support and regulation from the British colonial government. The aims of this new education were different, seeking to draw children away from aspects of their culture and into a new socio-cultural system. Education expanded rapidly, especially after independence and through the 1960's and 1970's. In the early 1970's the government took over the schools, providing a public school system throughout the country. The 1980's brought a downturn in the economy which has worsened in the 1990's. The worsening economy has adversely affected the ability of parents to send children to school and equip them with basic materials and textbooks. Hard times have also affected the availability of resources for learning, as library services, the publishing industry and book trade have declined. Hard times in combination with politics have lowered the morale and quality of teachers, the basic human resource of education. Education in Nigeria is in disarray.

EDUCATIONAL POLICY

Nigerian education at all levels is guided by the *National policy on education* (Nigeria, 1981). This document articulates a philosophy and structure felt to be more in keeping with national aspirations and needs in the modern world. Several provisions of this policy are of special relevance to this study.

Learner-centered and Resourced-based Education

The *Policy* stresses the need for learner-centered, self-directed and lifelong education. Pursuant to this it comes out strongly in favor of modern methods and against the former pattern of memorization and regurgitation of facts. This is especially pronounced at the primary school level, where "practical, exploratory and experimental methods" (Section 3, sub-section 3) are encouraged in order to develop "the ability to communicate effectively, scientific and reflective thinking, and the ability to adapt to a changing environment." (Section 3, sub-section 14) The *Policy* also stresses the need for learning resources and school libraries to support these objectives. But while the *Policy* emphasizes resource-based learning and learner-centered education and recognizes the place of the school library in making this feasible, not much has been done in actual situations to translate these aims into reality.

Language of Instruction

English, not the Nigerian languages, has been the predominant language of education. Having to learn in a second language puts children, especially younger children with no prior knowledge of the spoken language, at a serious disadvantage. Recognizing this problem, the Policy states that nursery school and the first three grades of primary school shall be conducted in the mother tongue. The aim is to gradually shift to English in grades 4 to 6. This policy has been both controversial and problematic in ways which cannot be pursued here. The fact that Nigeria has a multiplicity of languages (410 according to a BBC broadcast of April 19, 1997), many of which have not been transcribed, and that there are only a handful of primary school books even in three major languages indicates the scope of the problem. There are virtually no learning resources presently in use to support education in the mother tongue, yet this is the language spoken and understood by school children. The result is that, in a homogeneous community such as that of our study, lessons are explained to the children in Igbo throughout primary school, but the syllabus, textbooks, notes written on the board, and the examinations are all in English.

Teaching of Reading

The attainment of permanent literacy and numeracy is the first of the objectives of primary education. Yet many young people finish primary school or even secondary school without attaining basic literacy in either the mother tongue or in English. Among the obstacles children face in learning to read are their oral background, the illiteracy of parents, the current harsh economic conditions, and the use of a second language. It has also been mentioned in these studies that the entire education system presents obstacles to literacy and there is highly limited access to books and other reading materials (Dike, 1994; Emejulu, 1990).

Examination of the curriculum reveals that reading is not taught as a separate subject but is one of the four activities in the teaching of English language. Moreover, one cannot pinpoint any method of teaching reading beyond copying and repeating sentences the teacher writes on the board. There is no reference to phonics, not even learning the sounds of the letters. Studies of reading confirm the lack of instruction in methods of teaching reading in the teacher training curriculum (Emenyonu, 1993). In the early years learning to read is complicated by the fact that children are being introduced to a new language along with reading. As a result there is no oral foundation on which to build. The problem of reading is also intertwined with the problem of second language instruction. The instructors are not native speakers and do not have full mastery of English. Learning to read in both English and the mother tongue is hindered by the lack of reading materials at beginning levels—hardly existent in Igbo, often inaccessible or culturally unfamiliar for English. yet inability to read cuts children off from much of the information they require for fuller understanding of the world.

The Curriculum

In order to further implement the National Policy on Education, the National Implementation Committee oversaw preparation of Primary School Curriculum Modules for grades 1 to 6 (Nigeria, 1989). The curriculum modules are intended to assist teachers by outlining content and suggesting methods, activities and resources appropriate for the various lessons. The modules explicitly direct teachers to other resources for information to fill in the outline. Most teachers, however, lack access to other resources beyond, perhaps, a textbook. Pupils are also limited to the textbook, if one is available to them: they lack reference tools, topic books, fiction, audiovisual materials, in short, the learning resources which make up a library collection

One might note two additional features of the curriculum. First, it is based on foreign primary curricula gradually adapted for Nigeria. It did not evolve from the traditional education of Nigerian societies. While content has been Nigerianized, it may be that some aspects or emphases of indigenous education are not adequately reflected due to this pattern of development. Second, both the curriculum and the textbooks derived from it attempt to homogenize Nigerian culture to produce something suitable for the whole country. This attempt to find the lowest common denominator for what is a very heterogeneous society results in a bland and sketchy picture. Resources deriving from the local community might provide the meat to flesh out the skeleton, giving the specifics and vivid detail which lend interest. Their use would also enable children to base learning in their own experience and apply what is learned to the local situation.

PROJECT IN A PRIMARY SCHOOL

The researcher sought ways of improving primary school education by applying the ideas gained from previous work with adult learners. The aims were to develop resources from information available within the community, repackage information not accessible to children in its current form, and help children learn how to find and utilize information from a variety of sources.

The Setting

The setting for the project is a rural primary school in Nguru, a village near the university town of Nsukka. Like many primary schools, classes are conducted in long halls with clusters of desks arranged before sections of the wall painted to create blackboards. The pupils' desks are made to carry to school. As a result, the work surface may be as narrow as 5" x 20". This introduced unanticipated difficulties in carrying out learning activities, as there was no space to spread work out or support papers while drawing. The light provided by open windows high in the wall is inadequate; classrooms are often dark on overcast days. Moreover, there is no electrical power in the school. All of these factors present obstacles to learning.

We selected a rural school on the grounds that it would have a homogeneous population and be a more integral part of the local community. As a result, oral indigenous knowledge might be more readily available to pupils than in an urban setting, where the pupils' families have left their communities of origin. Moreover, urban schools on the whole might have slightly better facilities and more access to library and other resources.

One junior class, Primary 2, and one senior class, Primary 5, were selected for the project. Activities were planned by the two presenters and carried out with assistance from the class teachers. The Igbo speaker (Amucheazi) worked with the junior class and the non-Igbo speaker (Dike) with the senior class. Language, not surprisingly, was a limitation, especially for the non-Igbo speaker, but also to some extent for the Igbo speaker, who is from another area and therefore speaks a different dialect. It would have been desirable to make use of library science students as resource persons, as had been done in the past, but the university was no in session during the period.

Procedure

We began by looking at the pupils' entry behavior. What did they already know? What did they bring to the learning situation? We identified several elements, among them the spoken language, previous life experience and oral literature.

The spoken language. The children have a good command of spoken language in their mother tongue. They and their teachers share a common language, Igbo, and in most cases, the same dialect, Nsukka. Whatever difficulties children may encounter with written language, their command of oral communication makes the mother tongue an effective medium for instruction.

Previous life experience. School children have built up a knowledge base from the home environment. They are familiar with the objects and routines of everyday life, aspects of the natural environment, family relationships, social norms and structures, and common life experiences, such as the birth of a younger sibling, having a pet, taking a vacation to visit relatives (many of which are characteristic of human experience everywhere).

Oral literature. The oral tradition of storytelling and folklore remains fairly strong, in spite of some erosion. Several studies have revealed that most parents still tell stories to their children (Emejulu, 1990; James, 1981). Other folklore—songs, riddles, games—are learned from other children or adults in the community. From church attendance and religious education, children also are familiar with Bible stories. This body of literature constitutes a valuable resource for learning.

Information Sources within the Community

We next identified possible sources of information which might be made available for teaching and learning and ways these might be used in developing information skills.

Community sources. In addition to what children already know, there is a wealth of information within the local village community. Oral indigenous information concerning occupations, social institutions, cultural arts, plants and animals, domestic science, agriculture and health might be collected and repackaged as required to create resources for learning. Possible resource persons include parents and other family members, elders, and a variety of experts, both traditional and modern. The community also holds material resources such as realia, natural sites, and institutions.

Library resources. The most ready source of appropriate library resources is the Children's Centre Library at the nearby University of Nigeria. Through projects such as this one, its books, periodicals and audiovisual materials can be made accessible to schools. While almost all the materials are in English, and most at too high a reading level for public school children, this collection contains a wealth of information suitable for repackaging to meet the needs of the target audience. Likely approaches include oral mediation by teachers using the mother tongue, simplifying or translating text of information books and magazines, and creating audiovisual resources such as charts and albums. An additional source from within the university is projects from courses on oral information, audiovisual librarianship, and library work with children.

Development of information skill. We also considered how school children might utilize community information sources in learning how to find out. The *Nambia syllabus for basic information science* (1991) utilizes this approach by beginning with the most familiar and accessible information sources. By consulting human sources such as teachers, community leaders, elderly people and experts, children develop interviewing, listening, and questioning skills. Environmental sources such as nature, village and town/city help develop skills in observation, description, and interpretation. Use of human and environmental sources is especially important for information education at primary school level since the pupils' level of literacy precludes the use of many written sources of information.

Learning Activities

These ideas were tried out with learning activities in four areas: cultural arts, science, social studies, and language.

Storytelling—cultural arts (primary 2). The Igbo have a rich tradition of folklore for children which they use as a means of enculturation and socialization. This folklore can be song-based, story-based, speech-based, or activity-based. Traditionally stories were among the chief means of molding the character of the Igbo child. They also served as a repository of knowledge about the environment. Today they might also serve as a way of reasserting pride in traditional values and culture, which has been eroded by colonialization and modernization.

Yet it has been observed that the schools play little role in transmitting this cultural heritage (Emejulu, 1990). Children hear stories from their parents, relations and playmates, not from their teachers. If stories are told at all in the school setting, it is likely to be as a time-filler at the end of term. This reflects the teachers' view of folk tales as a form of amusement, rather than a valuable resource for learning.

Activities in the junior class began with reading aloud simple picture books in English as an aid to English language instruction. But most children could not follow even the simplest stories unless they were translated into Igbo. Children were, however, eager to tell many stories in their Nsukka Igbo dialect and sing some simple folk songs. Most of their stories were on animals like the squirrel, the dog and the monkey. Similar stories were translated and read aloud in their mother tongue. They also named animals they know as part of a singing game and talked about their habits. Their stories and rhymes were taped and repackaged into class-made story books. The activity showed that these forms of oral literature are ready to be tapped as a major resource for enriching the learning environment.

Social services and institutions—social studies (primary 5). Social studies is the primary school subject perhaps most in need of locally generated resources for effective teaching because of the diverse Nigerian cultural environment. Yet the textbooks try to present a generalized Nigerian culture that does not adequately reflect reality or provide adequate detail. Elaturoti (1986) made this same point with regards to the Abadina project using local resource persons to generate learning resources for social studies. A collection of taped interviews was developed on topics like festivals, foods, the family, government, and folklore, using a wide variety of resource persons from the local community.

Observing the same need, we organized learning activities whereby the children themselves would gather information through interview and present their findings orally in class. Using topics relating to the primary 5 syllabus, pupils interviewed members of the community connected with local and traditional government, banks, markets, the motor park, postal and telephone services, the water board, and other similar institutions. When possible, students visited the locations. Pupils also gathered information on festivals, preparing albums on masquerades, seasonal celebrations, marriage and naming ceremonies. These resources are useful both in being tailored to the immediate environment and offering a means of expanding knowledge through exchange with other communities. The activity enriched knowledge and helped develop interview, observation, and presentation skills.

Animals around us—science (primary 2 and 5). Taiwo (1980) has emphasized the importance of the natural environment in traditional Nigerian education. Yet the primary science curriculum touches lightly on the specifics of the world around—its animals, plants, physical features, geology, seasons, and habitats. A previous project related to African wildlife, using information obtained from books and magazines in the Children's Centre Library. Children in primary 4 - 6 were able to write and illustrate a big book on African animals as a group project. However, it was found that even books in beginning English had to be read aloud and explained in English or Igbo. Or, one child in a group of six could attempt the work while the others were reduced to onlookers. These observations led to the new approach for the initial stages, generating resources based on direct experience and repackaging information from written sources to suit the target audience.

The first step was compiling a list of animals the children knew. Children in primary 2 named many domestic animals in their environment and talked about their habits. Primary 5 pupils were asked to write what they knew about the animal and draw a picture. It was found that written expression was very limited in both Igbo and English and that children had very limited knowledge of animals outside their home environment.

The next step was to identify information which could be repackaged for use by the children. This was located in books, magazines and encyclopedias from the library. Other sources of information included locally produced materials such as an album on hunting made by a graduate student of audiovisual librarianship from oral sources. Expanded text on the various animals was written to supplement the information provided by the children. Other information was translated and communicated orally by the teachers. With this expanded information the class created a book with Igbo and English text. Traditional stories about the animals were added, creating a book which combined information and folklore.

A second activity involved creating resources from observation of birds. Initial sources included observation notebooks, West African field guides, and pictures. After an introduction, children were asked to record their observations of birds in the community. A format was designed to guide their observations of appearance, habitat, behavior, etc. Charts of colors, sizes and parts of the body were made to assist with vocabulary. Thus, the project aimed at expanding pupils' knowledge and appreciation of the natural world, increasing their observation skills as a tool for gaining information, and improving their mastery of English language.

Creation of reading materials—language (primary 2). The problem of language has already been noted above. While utilizing oral communication in the mother tongue, children also need to master English if they are to have access to the wider world of knowledge. One problem is finding reading materials with simple language and familiar content. Often such materials can be provided only through local generation of resources, even in some instances by the children themselves.

The importance of familiar content for beginning readers is a widely accepted concept. Studies carried out in the Laboratory for Children's Librarianship at the University of Haifa Library in Israel (Server, 1994) revealed that beginning readers have a marked preference for familiar stories and books and therefore could be helped by picture books read aloud and stories being told to them. This would build up their repertoire of stories and story patterns for reading. Studies in Nigeria (Emenyonu, 1993) have confirmed children's preference for familiar stories.

Yet books for younger children have the fewest titles in local publishing. The readers who most need familiar content and background are the most deprived. To help make up for this deficiency, common to most developing countries, pupils and teachers have created their own reading materials. In some South Pacific countries (Rainey, 1994), teachers and their primary school pupils have been able to 'publish' big books from stories and/or poems written by the pupils, corrected by their teachers, typed and bound into a collection of stories or poems. The Read project of South Africa (1994) has also used big books, created by classes to generate reading materials based on the local environment, using both the mother tongue and English.

Our project also used oral information provided by the children to produce materials for learning English. Children told a number of folk tales in class, which were recorded on tape. These were then illustrated and retold in simple English. In this way, familiar and appealing materials from oral tradition and the local environment provided a means of enhancing the children's reading ability.

CONCLUSIONS

While much remains to be done, much was learned from this preliminary project. Among the salient points from our experience are the following.

Nigeria has a Wealth of Oral Indigenous Information

There is a wealth of indigenous information in the rural Igbo community. It is communicated orally by experienced and mature adults to members of their group, including children. However, given the ephemeral nature of oral information and the many changes taking place within society, some aspects of this information may get lost unless ways are found to capture and preserve it. When this is done, the information may be disseminated to a wider audience beyond the community rather than being limited to direct person-to-person contact.

Nigerian Children Face Many Obstacles to Learning

Since the modern school system did not evolve from the traditional educations system, oral indigenous knowledge has not been effectively utilized in the school curriculum so that school children can benefit from such knowledge. Children are thus deprived of the wealth of information from their cultural background. They also have difficulty comprehending what is being taught and relating it to their lives.

Another obstacle to learning is an almost complete lack of learning resources. Even in the rare cases where books and other learning resources are available, almost all are in English, a second language, rather than in the mother tongue.

A third problem which makes learning difficult is that the children are barely literate in either English or their mother tongue. Therefore, if they are to learn, most of the information must be communicated orally in their mother tongue and, if possible, their dialect. This enables them to learn and the knowledge gained motivates and facilitates the learning of reading, which is a necessary step for further learning.

Information Repackaging is One Way of Overcoming These Obstacles

In order to teach children through oral transfer of information, information must be repackaged from written sources. The teachers should be chiefly responsible for this oral transfer of information. There is also need to repackage information into written forms through simplifying or translating. Since it is unlikely that classroom teachers will have the opportunity or skills for this, repackaging from written sources requires cooperation of personnel in library schools, teacher resource centers, model children's libraries, or a unit specially set up for that purpose. We are seeking ways of setting up such a unit at the University of Nigeria.

Adequate Information Cannot Be Found within the School

While we began by seeking oral information from the children, they have serious limitations as to the scope and depth of their knowledge. It is therefore necessary to go beyond the school to reach those who have such knowledge. One approach is to send the children out to collect information from their parents, grandparents, older siblings, relations, and experts or authority figures on the history, customs, or occupations of the community. With such information children might generate learning resources in school. Students of library science can also help capture information as projects in relevant courses.

Children Can Begin Developing Information Skills Without Literacy

Children's lack of literacy makes it difficult to develop information by other means, such as observing their community and environment, and interviewing knowledgeable members of the community. A wide range of information skills can be gained through these learning activities.

Information Repackaging Can Be Used to Promote Reading

Although children can learn and develop information skills up to a point without literacy, they can have access to much more information if they can read, especially if they can read English. It is therefore important to find ways of creating resources for learning to read. One sure source is the repackaged oral indigenous information as found in stories, local histories and environment knowledge, with which children are familiar and which they also find appealing.

The most important message of this paper is that in a country like Nigeria where children labor to learn, partly because of a serious lack of learning materials, it is still possible to improve their learning potential in a number of ways. One of the surest and least expensive ways is by making maximum use of available information in the immediate environment, capturing and repackaging orally generated information into both sound and print form for use in the classroom. The idea of repackaging information is no longer novel since it has been used successfully with adult audiences in rural development. In this case, it is being tried as a means of helping children learn. It is hoped that in the face of several crippling disadvantages faced by Nigerian and other Third World school children, the librarians, classroom teachers, and educational authorities will team together to tap the best of the information rich local environment. They can do this by capturing and repackaging information to produce indigenous resources for the better education of children and provision of information for all.

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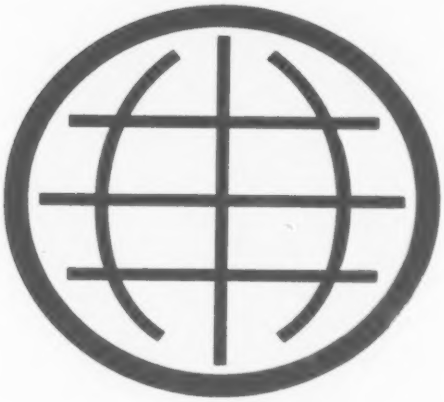
Theme 5

ACCESS TO INFORMATION: NARROWING THE GAP



THE IMPACT OF THE PRINCE EDWARD ISLAND SCHOOL LIBRARY POLICY ON THE DEVELOPMENT OF SCHOOL LIBRARY PROGRAMS ACROSS PRINCE EDWARD ISLAND

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ABSTRACT

In Canada's smallest province, Prince Edward Island (PEI), the *PEI School Library Policy* and its supporting documents have guided the development of school library programs since 1989. With a great number of educational changes as a back-drop, this study explored the impact that policy has had on school library programs in PEI. The researchers designed a comprehensive *Survey of School Library Resource Centres* that probed five key areas: facilities, resources, personnel, programs and services in the 66 schools across PEI. Following the completion of the Survey, 48 principals and teacher-librarians were interviewed for an hour each. 64 of the 66 schools took part and the Survey data and the interview data were analyzed using exploratory data analysis that resulted in dozens of visual and numerical summaries. Data was reported under each of the five major areas probed and 25 Actions were recommended.

The study yielded specific detail on the status of school library facilities and resources, and provided a comprehensive look at staffing procedures and problems. The educational concepts of resource-based learning, cooperative planning and information skills that are embedded in the *Policy* have been well-accepted across the system. New documentation is needed to update learning outcomes and to provide direction for integrating new technologies and the concept of information literacy. Future directions for professional development for teacher-librarians, principals and classroom teachers were outlined and specific needs were identified in the areas of staffing, rebuilding school library collections and connecting technology initiatives and resource-based learning.

BACKGROUND FOR THE STUDY

It is a time of great change in the education system in the Canadian province of Prince Edward Island (PEI). Restructuring has led to streamlined administrative jurisdictions, centralized curriculum services and a struggle amongst educators to redefine roles and identify new goals within the rapidly changing educational context. Throughout the change process, all areas of the education system have been examined to identify ways and means of streamlining program delivery and providing more effective and efficient programming for students. This has led PEI into collaborative relationships with the other provinces in Atlantic Canada in the areas of curriculum development, standard learning outcomes and consistent assessment procedures.

Coupled with the changes in curriculum and administration has been the growing influence of new educational technologies, particularly computers, on classroom and school library programs. While instructional technology has always had an influence on what educators do, the pervasive nature of computers has led to unprecedented change in the delivery of instructional services. New initiatives by governments have had a tremendous impact on the availability of computer hardware and software and all educators are feeling a growing pressure to hone their computer skills and integrate their use into their instructional programs. The school library community has been active in the transition from manual management systems to fully automated ones, as well as showing leadership in understanding the role of computer technology in developing information skills and making effective use of the information problem-solving process.

Coming out of this change process was the expectation that all educators spend some time reflecting on the objectives of past programs and set new goals in light of our contemporary understanding of curriculum delivery and of greater expectations from learners and society, in general, to develop the knowledge and skills needed for life in the next century. Since the school library resource center has played a role in the instructional program of most schools in PEI, it was natural that the focus turn to school libraries to examine what had been accomplished since the implementation of the PEI School Library Policy in 1989.

The PEI School Library Policy Statement (PEI Department of Education, 1989) established school libraries "as an essential element of the educational process for students at all levels of the school system." It set two main goals for library programs—the development of information skills and the use of these skills to ensure lifelong learning. It further established resource-based teaching/learning as the best way to achieve these goals through "a library program fully integrated with the school's instructional program with teacher-librarians and teachers using a cooperative program planning and teaching approach." These principles of an integrated school library program, resource-based learning, the role of the teacher-librarian and cooperative program planning and teaching have guided school library programs in PEI for eight years and were the impetus for many professional development activities for teacher-librarians, administrators and classroom teachers.

Following the *PEI School Library Policy Statement*, the PEI Department of Education issued a set of *School Library Resource Centre Guidelines* (1992), which outlined a set of "recommended standards" for PEI schools in the areas of school library program, personnel, collections, equipment and facilities. While they were not mandated by the Department, these guidelines acted as points of reference for district level policy implementers, school-based administrators and front-line teacher-librarians as they implemented the *PEI School Library Policy. An Information Skills Continuum* was also developed and issued as a support document for school library program development.

These three major documents set the school library community on a course that would see new teacher-librarian positions created by the Department's direct support of "outside-the pupil/teacher-ratio" positions, program initiatives by Department and district-level consultants, the implementation of a ten-course Diploma Program in School Librarianship by the University of Prince Edward Island, the development of district-level school library policies, plus a concerted effort by many individual teacher-librarians to make the goals of the *Policy and Guidelines* a reality in the province. Many teacher-librarians led numerous professional development activities for their staffs and colleagues to bring about the awareness that the school library was no longer simply a storeroom for resources, but an integral part of curriculum in all schools.

An informal examination of the results of these government and professional efforts indicated that successes were inconsistent. Many educators recognized the benefits of an integrated school library program, the need to teach students information skills and to nurture information literacy, as well as the importance of developing programs that foster lifelong learning. Some schools fully embraced these goals and built excellent school library programs, while others made important gains, but were still struggling to fully implement the *Policy*. Regrettably, other schools made few changes in their school libraries and they continued to place the goals of the Policy low on their list of new initiatives. It became apparent that after eight years with the *PEI School Library Policy Statement* as the main force guiding the development of school libraries in PEI, coupled with over twenty years of personal commitment by many teacher-librarians, the time was right for a serious examination of school libraries in PEI. It followed that any formal reflection on what was happening with school libraries would allow educators to celebrate their accomplishments and then set new goals that respected the principles outlined in the *Policy*, and that meshed with current curriculum initiatives across the country.

In summary, several compelling factors suggested the need for a formal examination of the status of school libraries in PEI and led to this study:

- There is a growing demand for change in education that has focused on the role of technology in learning, the goals of lifelong learning, as well as the establishment of more accountability among all partners in the education process;

- All aspects of the education system are under pressure to examine what they do and to see how well they will facilitate the meeting of these new expectations. For the school library community that meant examining the impact of the Department of Education's *School Library Policy Statement* to see how effective it has been over the past eight years;

- The principles entrenched in that *Policy*, such as resource-based learning, lifelong learning, integration of program goals and cooperative planning/teaching seem to have spread beyond the school library context and are now included in the new curriculum documents that are driving change across the Atlantic provinces. This indicated that the philosophy of the integrated school library was on the right track and, with the support of local research, could emerge as a pervasive and influential model across all areas of the curriculum;

- It appeared that strong gains had been made in school libraries over the past few years, but still, there are glaring inconsistencies in many school library programs across the province. Questions needed to be asked about how effective the *Policy* has been, how realistic the *Guidelines* are and what influences continue to limit the progress schools have made? How successful have schools been at implementing the *School Library Policy* and achieving the standards outlined in the *Guidelines*? Is there evidence for alternatives to addressing some of the limitations currently inhibiting progress for school libraries?

THE RESEARCH PROCESS

This study examined the impact that the *School Library Resource Centre Policy* has had on elementary and secondary schools in PEI. It focused on collecting information on the status of services, facilities, personnel, resources and programs currently available in PEI school library resource centers. All schools were invited to take part and two instruments were used to collect quantitative and qualitative information. First of all, a general survey on school library resource center services and programs was sent to all 66 schools in PEI. It provided a wide-angled report on conditions in PEI schools after eight years of efforts to implement the *Policy*. Secondly, 48 one-to-one interviews with administrators and teacher-librarians or library contacts gave an up-close look at the situations found in a sampling of 24 schools chosen for geography, school size and school district.

Data was analyzed using a series of exploratory data analysis (EDA) techniques which generated visual and numerical summaries of the results, such as graphs and summary tables. These results were presented within the five areas of investigation—services, facilities, personnel, resources and instructional programs.

The emphasis in the reporting and dissemination of the results was on presenting them pragmatically and in terms of future plans of action that meshed with current Department curriculum initiatives and future innovations. Twenty-five recommended actions for future development of the *Policy* were made, as well as suggestions for the maintenance of existing programs.

The Survey of School Library Programs in PEI

The principal instrument used in the study, the *Survey of School Libraries in Prince Edward Island* (the *Survey*), was constructed by the researchers to examine five key areas outlined in the *PEI School Library Policy* and the *School Library Resource Center Guidelines*.

Each area of the *Survey* consisted of questions requiring a 'yes/no' answer or the choosing of a response from a five-point scale that was closest to the participants' experience. Questions were drawn from the expectations outlined in the *School Library Resource Centre Guidelines* and the lists of components of a comprehensive library program as outlined in the *School Library Policy Statement*. The following is a breakdown of the general areas used in the *Survey* and of the specific topics probed under each section:

- **Facilities.** Participants answered questions on the size of their facility, general features of the facility, seating capacity, shelving, collections areas available, as well as computer facilities.

- **Personnel.** Questions in this section centered on the staff allocation for the school library, the inside/outside the school ratio proportion (i.e., time added from the Department of Education), the use of support staff, the level of professional training and teaching experience of school library personnel, involvement of library personnel in professional activities, as well as their future professional development needs.

- **Resources.** This was the largest section of the Survey. The availability of various types of resources was probed including fiction and nonfiction books, reference materials, periodicals, AV/computer software, equipment and the information file. For each area, participants indicated a number of the items in the school library and then rated that part of the collection for currency, size, reading level, match to students' reading interests and match to the school's curriculum needs. A small section on the school library budget focused on the size of that budget, as well as funds received from book fairs, school fund raising and donations. Resource management was probed with questions on selection of resources, purchase and processing of resources, weeding and donations.

- **Services.** Participants gave an indication of their frequency of use of external sources to provide resources for the school library, supplying resources to classrooms, how book exchanges are handled, how students access the instructional program and what technical support for AV/computer hardware and software they provide teachers.

- **Instructional Program.** Questions in this section concerned whether the school had a school library policy and/or a plan for information skills development. Teacher-librarians were then asked the percentage of their allocated time spent on instruction, planning and management. At the end of each section of the *Survey*, participants were invited to write any 'other' comments they wished. Almost everyone used the spaces provided and all of the 'other' comments were transcribed and included in the data analysis.

Procedures

All 66 public schools in Prince Edward Island were sent a copy of the *Survey* in December, 1995 and invited to take part. Administrators in the school districts and their teacher-librarian or library contact had been notified earlier in November and told about the purpose of the research and the procedures that would be used. Department of Education and district level staff facilitated the process by encouraging all schools to participate. In total, 64 of 66 schools responded by February 1996 for a 96.9% response rate. This is an extremely high return rate and it reflects the deep commitment and interest of teacher-librarians and library contacts. As the Surveys were returned, the results were entered into a database for later analysis. The accuracy of data entry was verified by having an independent assistant check the data entry on a random sample of 20% of the *Surveys*.

The Interviews

As the *Surveys* were completed, plans were finalized for the second part of the study - a set of research interviews. Out of an early examination of the *Survey* results, several questions were raised and became part of the set of interviews that followed. Questions were also included from each of the five areas under investigation.

After the questions were designed, procedures began for identifying which schools would be contacted and invited to take part in a one-hour interview. With 66 schools to cover, it was impossible to interview everyone, so a representative sampling of schools took into consideration the geographic location of the school, the school population and the school type. A balance of all these factors, plus a commitment to interview at least one-third of the schools, led to the choosing of 24 principals and 24 teacher-librarians/library contacts to take part in the interviews. Table 1 gives the distribution of schools used in the interviews.

Table 1: Distribution of Interviews

Geography

Prince County: 8
Queens County: 9
Kings County: 7

School Type

Elementary: 7
Junior High: 1
Senior High: 5
Elem/JrHi: 6
French: 1

School Size

under 250: 5
250-400: 5
400-550: 4
550-700: 4
over 700: 6

All interviews were conducted by the same researcher, were recorded and later transcribed for analysis. A random sample of 20% of the completed interviews and transcriptions was verified by the second researcher. Response to the interviews was very positive; all who were contacted agreed to take part and they repeatedly stated how pleased they were to address the issues of school library programs in PEI. The interviews were conducted during late February and March and the transcription and analysis processes were on-going as the interviews were completed. With the Surveys and interviews completed and the data entered and the transcriptions checked for accuracy, the main data analysis began.

Analysis of the Survey Findings

Results of the *Survey* were analyzed by grouping responses within the five areas under investigation—facilities, personnel, resources, services and program. Questions that were related to similar issues were grouped under one of the five principal areas. For example, the general area of school library facilities, community use of the facility and in-school use of the facility were examined together. In the area of school library personnel, questions about clerical staff, use of volunteers and use of student library monitors were grouped under support staff. These categories were then examined by school type, either elementary (grades 1-6), junior high (grades 7-9), senior high (grades 9/10-12), elementary/junior high (grades 1-8/9) and French (grades 1-12).

A second analysis of the same data was done by regrouping the results into categories based on full-time equivalent (FTE) staffing allocated to the school library. These categories were: 0-FTE (no teacher-librarian, just a library contact); .1 to .3 FTE; .31 to .55 FTE; .6 to .99 FTE; and equal to or greater than 1 FTE (= > 1). Table 2 below, outlines these categories and the number of respondents in each FTE category. This analysis by FTE made it possible to identify differences on variables according to the amount of time the respondent was working in the library position.

Table 2: Category of SLRC Personnel by Full-Time Equivalent (FTE) Staff Allocation

FTE Category	Number of Positions	% of Total
0-FTE	13	20.31%
.1 - .3 FTE	8	12.50%
.31 - .55 FTE	10	15.63%
.6 - . 99 FTE	11	17.19%
= or < 1.0 FTE	22	34.38%
TOTAL	64	100.00%

With the data organized by category of school library topic, by school type and by FTE, a series of descriptive graphs were generated that presented the results as visual summaries. This method was in keeping with the research goal of examining the results as a 'snapshot' of what conditions were like at one point in time. No attempt was made to assign causality to the relationship amongst the variables—simple description of the results was the goal. The graphs were simple bar graphs or line graphs which make it easy for the reader to 'see' what is happening.

Analysis of the Interviews

Once the transcriptions of the recorded interviews were completed, analysis was organized by type of respondent, either principal or teacher-librarian/library contact. A holistic analysis was done first which consisted of listening to the tapes and reading the printed transcriptions. Important themes and general trends were noted. This was followed by a more detailed examination of individual questions across all respondents in which each different response was recorded and counted. The number of times an answer was given was noted and the salient points or recurring themes were tracked. Quotes from the text that represented typical responses were recorded for inclusion in the reporting of results.

A SUMMARY OF THE RESEARCH FINDINGS

The analysis of the Surveys and the interviews yielded a wealth of detailed information on dozens of topics within each of the major areas investigated. Space limitations do not permit the reporting of the findings in such great detail here and so a series of research summaries are presented in order to encapsulate the key findings under school library facilities, school library personnel, school library resources and the combined areas of school library services and programs.

School Library Facilities

The school library facilities averaged over 1700 square feet, and were reported to be open for students and teachers most of the time. The students and teachers in the school used the school library facility for a variety of purposes, other than as a school library, and the community also used the facility as a meeting place for various events. Almost all school libraries reported space for a reference collection and for collections of fiction and nonfiction trade books. Other collection areas, such as periodicals, professional materials, AV/computer software and information files were found in varying degrees in the facilities. Variance was also found in the type of seating available for students. If a school library facility could accommodate whole classes, small groups, independent study and quiet reading, respondents felt they were better able to meet the varied needs of an integrated school library program.

Computer facilities are rapidly changing in all school libraries. The number of computers available in the school library is growing, but many respondents still reported limited access to lab facilities and only one multimedia workstation. Access to the Internet and networked systems was also increasing, but they were often described as emerging as parallel services for teachers and students, rather than as integrated components of a school-wide plan for information literacy.

In discussions with teacher-librarians/library contacts and school principals, several recurring themes were identified. There was a need to coordinate the installation of new educational technologies in the school with the technology needs of the school library facility. In many cases, plans were racing ahead for adding computer labs, on-line services, networks and software applications without any knowledge of what the school library had already accomplished in automation and in providing computers for accessing databases and word processing. Collaboration is needed by all educational partners to streamline the duplication of effort and also to promote the development of expertise by different partners for areas in which they can contribute the most to the overall information literacy needs of students. Part of that collaboration is recognizing the future potential for the school library.

Schools with open-area libraries or single-classroom/double-classroom facilities were found to have a set of problems rooted heavily in the nature of their facility. It appeared that newer schools came closer to matching the expectations of the *School Library Policy* and the *School Library Resource Centre Guidelines* documents, while schools with open area facilities were limited by noise and traffic problems, lack of walls and poor display space, as well as limited or inadequate storage facilities. The single-classroom/double-classroom facility seemed limited by its small size and lack of room to grow. Many of these facilities were designed and built at a time when a school library program was limited to reading stories to children and signing out books. Several respondents felt they were limited by their facility in developing a program that included more research by students, more independent resource-based learning projects and activities that include the use of technology. It appeared that these facilities will continue to deteriorate unless a concerted effort is made to address the limitations imposed by the facility itself.

With such a variance in the state of school library facilities and with such a wide range of individual needs, it is necessary to take a different approach in dealing with improvements to these facilities. It is impossible to recommend one action or set of actions to alleviate the problems. The province has a set of *Guidelines* and a clear vision for what the school library program should be like. What is needed is a team approach to the situation where other practitioners could visit a school library and provide assistance to a committee of teachers in the school to develop a long-range plan of action that would address the specific needs of that school library facility. The Department of Education could support this model as a professional development activity by providing release time for people to visit schools and consult with staffs as they develop an improvement plan. Individual school districts could encourage schools to develop strategies for implementing their improvement plans that would include budget plans for maintenance and renovation. Improvements to school library facilities could be achieved with a collaborative approach. In this way, the plan of action could be kept realistic, and thus more attainable, since it would emerge from the school base and would be supported in a collegial way by all education partners.

School Library Personnel

Staffing issues continue to dominate the development of successful school library programs in this province. Findings indicated that staffing is holding at consistent levels over the past few years, but that staffing below the .5 FTE level is still too common. Small schools with a population below 200 students had no staff and relied on a classroom teacher volunteering to be the library contact for that school and look after the facility. The designation of library contact positions needs to be reassessed since in many ways these individuals are acting as teacher-librarians with no time to do the work. This results in the illusion of staffing being created with no real gains for the school library program.

It was also noted that there are some wide variances in the staffing of school libraries with schools of the same size having very different allocation of staff to the teacher-librarian position. For example, one school of 400 students allocated .4 FTE for teacher-librarian, while another school of 408 allocated .8 FTE and a third of 354 students allocated 1.0 FTE. The recommendation was made that a new set of staffing guidelines be issued to clarify the 1.0 FTE to 400 students ratio as previously suggested in the provincial *Guidelines* and to stimulate new initiatives in the staffing of school libraries. Table 3 below outlines the recommended staffing guidelines.

Table 3: Staffing Allocation for Teacher-Librarian FTE

School Size	Staffing Allocation
over 800	1.5 FTE plus 1.0 clerk
400-800	1.0 FTE plus .5 clerk
400	1.0 FTE
200-400	.5 FTE
< 200	.5 FTE (2 or more schools share)

A great deal of discussion centered around the Department of Education's program to provide outside-the-ratio positions to support FTE teacher-librarian positions. The use of these outside-the-ratio positions seemed to result in some serious differences in the way they were awarded and used across the system. It was recommended that this program be maintained and increased, but that more accountability be attached to the awarding of such positions to schools.

Improvements in the qualifications of teacher-librarians were noted, due to the success of the Diploma in School Librarianship at the University of Prince Edward Island, and various provincial, district and in-school professional development efforts over the past few years. Teacher-librarians and library contacts indicated very different professional development needs. Those with smaller FTE wanted support with management issues while those in full-time positions were looking for help in curriculum and program areas. Suggestions were made to identify more specifically future professional development needs and for the development of a long-range plan for teacher-librarian professional development. Efforts also are needed to share the accomplishments of many front-line teacher-librarians who have developed exemplary programs, many in spite of some serious limitations.

School Library Programs and Services

The quality and comprehensiveness of school library programs and services was seen as directly related to the percentage of allocated time for the position of teacher-librarian. The more time allocated to the position of teacher-librarian, the larger the amount of time that could be given to instruction and cooperatively planning with teachers. Those in positions with less than .5 FTE spent a greater proportion of that time on the management duties associated with operating a school library resource center. There seems to be a critical mass of time needed in the teacher-librarian position before a comprehensive instructional program can develop, one that is in line with the goals outlined in the *PEI School Library Policy*. The same findings held for the use of time for planning—the larger the FTE, the more time was spent planning with teachers, the more times the *Information Skills Continuum* was used and the more meetings were held with principals.

School library programs were described in one of three ways: as limited, focused on book exchanges and some isolated teaching of skills; as parallel, where the teacher-librarian complemented the classroom teacher's program; or as collaborative, where instruction was integrated with classroom programs. Strengths were seen in the area of providing instruction, providing resources and in working with classroom teachers. Principals added that strengths were in the teacher-librarian as a strong leader and collaboration with classroom teachers. Major weaknesses were in the staffing allocation for the teacher-librarian position and the resource collection.

The interviews suggested that the concepts embedded in the *School Library Policy* are well understood and accepted. The need for classroom teachers to have a greater understanding of these same concepts was identified as a major in-service need. Many participants felt that the Department of Education needed to send a clear message of support and commitment to the educational community to clear the air of uncertainty from the future of school libraries in PEI. Many of the future professional development activities should focus on creating a climate for collaboration that will bring teachers together to build resource-based learning and many of the other educational concepts embedded in several of the educational documents that are currently influencing the school system. Participants also identified the need to update the *School Library Policy* and the other school library documents to bring them more in line with current thinking on information literacy.

School Library Resources

Although elementary and elementary/junior high school collections met the minimum expectation of 15 books-per-student as recommended in the *Guidelines*; other school types did not. Nonfiction collections were identified by all levels as inadequate to meet curriculum needs and student reading levels. Trade book collections also had more fiction than nonfiction, a balance that did not meet the recommendations in the *Guidelines*. Table 4 summarizes the book-per-student numbers by school type.

Table 4: Books-per-Student by School Type

	Elementary	Junior High	Senior High	Elem/Jr High	French
Easy Fiction	4.94	0.65	0.59	4.78	7.69
Fiction	4.86	4.69	2.67	7.38	8.38
Nonfiction	6.15	5.00	8.19	7.41	10.21
Total	15.95	10.34	11.45	19.57	26.28

Reference collections had a wide variety of different types of items in them but concerns were expressed about the currency of the materials and the size of collections to meet the demands of student research projects and teachers' programs. Information files were found mostly in schools with enough time allocated to the teacher-librarian position to allow for time to be spent keeping the information current.

Many concerns were raised about the state of repair of audio/visual equipment and software. Many reported these resources out-of-date and not well matched to current curriculum needs. Concerns were also expressed about future maintenance of the new computer hardware and software currently enjoying favor across the system. Periodicals were reported heavily used in senior and junior high schools, but ratings for their match to student interest and reading level were low.

Almost all school libraries reported that a budget was given each year to buy learning resources. Some funds were also raised from book fairs, with minor amounts from community groups or other fund raising. Concerns were expressed about situations where the teacher-librarian had little input into the budget process so that resource collections could not be developed with any consistent budget allocation. It was a universal concern that more money for resources is needed if collections are to be brought up-to-date and enlarged to meet the demands from current curriculum and resource-based learning projects.

The current school library collections need financial support from government over the next few years in order to alleviate the present poor condition of collections and to give students and teachers the resources they need for curriculum endeavors. Recommendations were made for the development of a centralized selection system for school library collections that would establish a process for new curriculum resources to be selected and made available for the local school library. Liaison with the Provincial Library system, publishers and all levels of program implementation would be essential to facilitate the success of this system.

It was suggested that individual schools also set up plans for collaboration on the collection development process to include setting consistent budgets for resources, writing collection development plans and including teachers in the selection process. Linked to the issues around the state of school library collections was the need to update the *PEI School Library Resource Centre Guidelines* and the Information Skills Continuum to reflect more accurately the curriculum and resource needs of students and teachers.

MAJOR FINDINGS

Several summative statements can be made across all five areas investigated and from both research instruments.

- There has been a general growth and acceptance of the principles of resource-based learning, the role of the teacher-librarian, cooperative program planning and teaching and the integrated role of the school library program. No suggested changing out these concepts and come up with something new. In fact, with the emphasis recently placed on resource-based learning by the Atlantic Province Education Foundation (APEF) documents, participants felt the concepts had been reinforced and validated. The discussion in this study was on the factors that inhibit the full realization of the potential these concepts offer, rather than suggesting the concepts are unfounded or not important to current curriculum activities.

- Participants felt strongly that the *Policy, Guidelines and Information Continuum* needed to be updated to reflect the influence of technology on the role of the school library and to set direction for the use of the concept of information literacy as a more inclusive way of expressing the role that school libraries and the teacher-librarian should play in the school curriculum. A set of learning outcomes needs to be developed out of the *Information Continuum* to match the current regional initiatives to describe programs in terms of expected outcomes. The documents need to be re-packaged into a single information literacy document that includes examples of 'best practices', as well as detailed suggestions for classroom teachers and teacher-librarians for implementing resource-based learning and the cooperative planning process.

- Participants expressed a need for the Department of Education to make it clear that it still sees the school library and the role of the teacher-librarian as a vital and integral part of its curriculum goals for the province. A 'dark cloud' hangs over the teacher-librarian community as members wonder whether PEI will have its school library programs "gutted" or whether they will continue to receive support from the Department. They wonder if they should bother with the effort it will take to continue schools on a road toward full realization of the potential for school libraries. The Department needs to take some action that will clear the air of uncertainty for teacher-librarians and reiterate its commitment to school libraries and support them to get on with the job.

- There is clear evidence from the study of the inextricable link among the school library program, the personnel hired to develop the program and the resources needed to fully implement the program. We can say that more resources is not the answer, or more staffing will not solve the problem, but the reality indicates that there is a critical mass for both staffing and resources below which a school library program cannot develop. A positive finding of the study was that there are many examples of some exemplary programs when all three come together. That is not to suggest that these programs are perfect either, but with the basic pieces in place, such as at least a .5 FTE teacher-librarian, some great things can start to happen.

- Teacher-librarians and administrators saw a need to broaden the implementation process for school library programs to include more efforts aimed at curriculum consultants and classroom teachers. Many found these teachers were not knowledgeable about the vital role played by the school library or the value of having a teacher-librarian in the school. Past efforts have been aimed at teacher-librarians, library contacts and administrators, but indications were that classroom teachers and those developing new programs needed to be made aware of their role in the overall plan for resource-based learning and the integrated school library program. Suggestions were also made that there are many new administrators in the system and that many of them had not received in-service training on the goals of the *PEI School Library Policy*. They were also seen as a group needing support in finding creative solutions to some of the managerial problems that stand as roadblocks for some in the full implementation of an integrated school library program.

- Future curriculum development plans need to be made with the goal of making connections, whenever possible, with the school library program. If new programs are being piloted, then the teacher-librarian in that school should be included so he or she could 'pilot' the resource-based learning aspects for the new program. Stronger connections also need to be drawn between new program initiatives and collecting information on existing resources to support the program or new ones that will be need to be acquired.

- Several major issues related to staffing school libraries and up-grading school library collections will have to be addressed if the philosophy of the school library program is to be fully realized. Efforts need to be made to provide all school libraries with at least a .5 FTE position for the teacher-librarian and for support staff for libraries in larger schools. More detailed information on resources and equipment needs to be gathered and ways of streamlining the selection and ordering of resources need to be found. Budgets need to be increased to help bridge the gap that has developed over the past few years in school library collections that have not been able to keep an adequate supply of current and relevant resources.

- In some schools, the facility used for the school library is inadequate for fully implementing a school library program. Some facilities cannot accommodate more than a few children at once and several were having difficulties integrating the new information technologies because of the limitations of the facility. Single or double classrooms converted into a school library and several of the open plan school library facilities present special problems. While some of these difficulties will need a major renovation to alleviate the problems, efforts could be made to take small steps now to improve the situation.

- Collaboration across the system, within the school and between teacher-librarians and administrators was identified as a crucial determinant of success for the school library program. Schools that were successful at implementing the school library program were places where the principal and the teacher-librarian communicated frequently about the school library program and the school in general was a place where teachers collaborated in a collegial climate. Professional development across the system needs to focus on the collaborative nature of change and place more direct effort in helping all educators apply collaborative principles. This will facilitate all aspects of curriculum development, but will be especially important to implementing a school library program.

AN OPPORTUNITY FOR RENEWAL

These nine major findings form the framework for a general renewal of school library programs in PEI. They are rooted in a comprehensive and broad research base; they recognize the accomplishments of the past and set out the challenges for the future; they provide a strong direction for future curriculum endeavors; they clarify the major limitations on existing programs; they provide concrete suggestions for addressing some of the issues affecting school library programs. What needs to be provided now is an opportunity for the school library community, educators across the system and Department of Education officials to enter into a discussion about the implications of the study and to define the next course of action. Most of the findings and many of the suggested actions need to be incorporated into existing structures and programs and will develop over time, while others need immediate action and new initiatives.

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LIBRARIES AND READING HABITS AMONG ELEMENTARY SCHOOL CHILDREN: THE CONCEPT OF THE CLASSROOM COLLECTION

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ABSTRACT

The elementary school regards the development of reading skills and the cultivation of free reading among students as one of its tasks. one of its ways of achieving this is to operate libraries in the school. Some schools provide only a central library. Some societies or locales, however, also believe in operating classroom collections in the elementary grades, so as to increase children' a exposure to books and reading. The reading habits of 301 fourth-grade students in Israel were examined. The sample included: (a) children who participated in a class library project in grades 2-3, with a central library also existing in the school; (b) children who participated in a class-library project in grades 2-3, with no central library in the school; and (c) children who did not participate in a class-library project, while having a central library in the school. Certain contribution of the class library project emerges, but the realization of this contribution depends on the existence of a central library in the school. A class library is not a substitute for a central collection. It can only constitute one approach among different approaches that can encourage children reading.

INTRODUCTION

Children read to satisfy the natural urge of curiosity and to broaden their understanding of the world they live in. Reading satisfies additional needs of the child: coping with challenges, a sense of security, gaining approval, a sense of belonging, being loved, the quest f or identity, and identification with historical figures or fictional characters. Stephen Krashen (1993) summarizes studies that indicate the power of reading. Research results have shown that reading contributes to improvement of vocabulary, spelling, writing style, reading comprehension, and of grammatical development.

Daniel Boorstin (1984) maintains that free reading, or the lack of it, is what determines a society's extent of advancement and enlightenment, cultural characteristics, and capacity for intellectual self-rule; therefore, one of the goals of an enlightened society is that its members will be "readers for pleasure" or "free readers." The process of becoming a free reader is a gradual one. Chall (1983) posits six stages through which the child passes from beginning reader to skilled reader, and ultimately to free reader:

Stage 0: Prereading: the preparing stage - occurs during the preschool age - birth to age 6.
Stage 1: Initial reading, or decoding stage - occurs during grade 1-2, ages 6-7. The essential aspect of Stage 1 is learning the arbitrary set of letters and associating these with the corresponding parts of the spoken words.
Stage 2. Confirmation, fluency, ungluing from the print - occurs during grades 2-3, ages 7-8. Reading in Stage 2 consolidates what was learned in Stage 1.
Stage 3. Reading for learning the new- new knowledge, information, thoughts, and experiences - occurs during grade 4-8.
Stage 4: The stage of having multiple viewpoints - occurs during *high school, ages 14-18.*

Stage 5: Construction and reconstruction - occurs during college/ university, age 18 and above. In this stage the reader is able to use selectively the printed material in those areas of knowledge central to one's concern.

Chall argues that **Stage** 2, that of fluency, which occurs during grades 2-3, is the focus of interest as far as reading for pleasure is concerned. The transformation of a beginning reader into a free reader is dependent on this stage.

Anderson, Wilson and Fielding (1988) found that the measure of the amount of time devoted to reading in the period from grade 2 to grade 5 is the best predictor of the child' a development as a reader. Morrow(1983) maintains that reading habits take shape up to grade 6. At that age, the child' s "reading type', is already an irreversible fact. Hence, the development of reading skills and the cultivation of free reading among students form one of the main task, of the elementary school.

Schools employ motivational reading activities of various kinds:

a. Providing children with opportunities, time, and materials to engage in book-related activities by:
  - Placing large selections of popular books in school, e.g., "book f lood" projects in New Zealand and Great Britain (Krashen, 1993)
  - Present literature to children daily (Hickman, 1981)
  - Free silent reading in class (Krashen, 1993)
  - Reading aloud in class (Fitzbgibbons, 1994)
  - Discussion of books with teachers or librarians (Nilsson, 1987).

b. Creative activities:
  - Sharing books through written or oral communication, in visual form, or by videos, displays, etc.
  - Having children make their own books (Morrow & Weinstein, 1986) Using creative storytelling techniques, e.g., puppet shows, music stories (Morrow & Weinstein, 1986)

c. Activities that encourage reading outside of school:
  - Reading time outside the classroom, such as reading at home specified as an assignment, or reading with a parent (Fitzgibbons, 1994)

One of the ways to encourage reading is to operate libraries in *the school. Librarians* believe that *this enriches* the print environment and results in more reading. Gaver (1963) reported that children who had access to school libraries did more reading than those who did not have a library in their school.

Some schools provide only a central library that constitutes an inclusive resource center and serves all the grades in the school with their different needs. Some societies or locales, however, also believe in providing classroom collections in the elementary grades, so as to increase children, s exposure to books and reading.

In Israel, the Ministry of Education and culture has for a number of years conducted a class-library project for grades 2 and 3 (recently extended to grade 1).

The fact that this project is associated with, and encouraged by, the Ministry of Education and Culture is expressed both in the budgeting of the project and in the lists of recommended books. At present, the project encompasses hundreds of schools throughout the country. It is managed by regional coordinators who supervise and work with the participating schools.

THE CLASSROOM LIBRARY

The classroom library is usually situated in a special corner of the classroom containing an assortment of books in various fields of interest and at different levels of difficulty together with additional art materials and work kits (Stott, 1967; Hepler, 1992). Books are usually those designated for lower grades, and can be read in class or at home on a borrowing basis. The advantage of the class library is the enhanced exposure to books. Studies have shown that immediate exposure to books increases free reading by children (Bissett, 1969). Some maintain that the existence of a class library contributes to greater involvement and sense of belonging among students to the encouragement of reading, to development of awareness of the library, and to children's understanding that teachers regard reading as an important activity, as well as enabling teachers to relate personally to children and their reading (Bavakutty, 1981; Memory, 1981).

The classroom library can contribute to encouraging reading only in conjunction with the proper physical conditions, which create an atmosphere of "invitation to reading" for children-- such as, for example, a rug, cushions, open and attractive shelves, displays of books and book jackets. Studies have found that children do not use class libraries that are slovenly or unsightly; whereas children in kindergartens where there were good class libraries, chose, in their free time, to participate in reading activities (Morrow & Weinstein, 1986).

Fractor et al. (1993) indicate a number of necessary features for classroom libraries: attractive and highly visible area, separated from the rest of the classroom; special seating arrangement, in an area that can accommodate at least five to six pupils at a time; a variety of genres and reading levels, with at least five to six books per student; and literature-oriented displays.

Nevertheless, one of the weaknesses of the class library is the shortage of resources, which detracts from the goal for which such libraries are established. Many libraries contain very few books, some of which were acquired as gifts or from children's homes and are therefore inappropriate for encouragement of reading. Mary Francis (1989) points to the related disadvantage that these small amounts of books may include familiar volumes that children have seen over and over again.

Morrow (1987) describes a project that was implemented in four recreational day care centers in New York, combining library corners with a recreational reading program. As a result of the project, the children's attitudes toward books improved and increase use of books was reported in all four centers.

Morrow and Weinstein (1982) conducted observations in 13 kindergarten classrooms of literature use by children in their free time. In some of the kindergartens a classroom reading program was implemented; in others the library corners were redesigned; in still others both the program and the design were implemented and there was also a control group. Data were collected before and then one week after the introduction of the changes (for two weeks period).

Literature use was significantly greater in all three experimental conditions than in the control condition. However, the changes produced by the three experimental conditions did not differ significantly from one another.

In another study, Morrow and Weinstein (1986) investigated the effects of both literature activities and the creating of attractive library center on 142 second-grade children' s voluntary reading. One group of students received school-based intervention only; second group received school -based intervention plus a reading-at-home program; the third was a control group.

Both the implementation of regularly scheduled literature activities and the creation of appealing library centers led to a substantial increase in children' s selection of literature during free-choice time. However, no effect on voluntary reading at home was found (as reported both by the children and by their parents).

Gaver (1963) conducted a study among sixth-grade students of six schools; two of the schools had central collections administered by one of the teachers, two contained classroom collections, and the other two had a central school library, administered by librarians and serving both the students and the teachers.

Both the quantity and the quality of the materials read were higher in the school library category. Over a three-month period, students in schools with a central library read an average of 14 books (during a three months period), compared to 6-9 in the other schools. They also read more varied material: three genres on average compared to only two among the other schools' students.

However, a study that was conducted for the British School Council in 193 elementary schools and 188 secondary schools found less free reading among students from schools with classroom libraries (all these schools also had a central library) compared to students from schools with central libraries only (Great Britain. School Council, 1977).

THE STUDY

Despite the possible importance of class libraries, only a small number of studies have assessed their effects. Most of these studies focused on children's reading habits while they were participating in a class-library project, but not on the long-range effects of the projects. The present study's objective was to investigate the relations between the type of school library and the students I reading habits over the long range.

The study's hypothesis

Students who have a central library in their school together with classroom collections read more than students whose school has only a central library or only classroom collections.

Reading was measured by:

1. Amount of reading
2. Average number of hours per day devoted to free reading
3. Having library-borrowed books at home

Research design

Questionnaires were distributed among a sample of 301 fourth-grade students from four elementary schools. The socio-demographic characteristics of the four schools' students were quite similar: center of the country, urban areas, middle-class. The sample included:

(a) children who participated in the class-library project in grades 2-3, with a central library also existing in the school (107 students)
(b) children who participated in the class-library project in grades 2-3, with no central library in the school, but with classroom collections in all the classes including the fourth grade (91 students)
(c) children who did not participate in a class-library project, while having a central library in the school (103 students)

Some 6.3% of the subjects (19) did not have books for free reading of their own, 24% (72) had only few reading books at home, and 69.7%- (209) had many private books at home (see Table 1) (Reading books exclude reference and non fiction materials). Comparing the students by their school libraries reveals a picture that is largely similar, although few more books were owned by students in whose schools there were central libraries only and more books by students whose schools had central libraries and who had also undergone a class library project in grades 2-3, hereafter referred to as combined libraries.

Table 1
Amount Of Private Books By Type Of School Library

No. of Reading Books at Home	Combined Libraries	Central Library	Classroom Library	Total
No books	9 (8.5%-)	5 (4.9%)	5 (5.5%)	19 6.3%
Few	18 (17%)	26 (25.2%)	28 (30.8%)	72 24.0%
Many	79 (74.5%)	72 (69.9%)	58 (63.7%)	209 69.7%
	n=106	n=103	n=91	n=300

RESULTS

In table 2 amount of book reading by the study subjects is details according to type of library in the school. The table shows that the percentages of students who could be called intensive readers (reading 1-2 books per week) are similar between students in schools with class libraries only (72.6%) and students in schools with combined libraries (69.2%). In schools with a central library only, only 60.8 of the students responded that they read at least one book per week. As for reading at least one book every two weeks, the percentages are 96.3%- of students in schools with combined libraries, 93.5%- of students in schools with a class library only, and 83.3% of students in schools with a central library only.

Table 2
Amount Of Books Read According To Type Of Library

	Classroom Libraries		Central Library		Combined Library		Total	
2+ books per week	34	37.4%	32	32.4%	22	20.6%	88	29.3%
1 book per week	32	35.2%	30	29.4%	52	48.6%	114	38.0%
1 book per 2 weeks	19	20.9%	23	22.5%	29	27.1%	71	23.7%
1 book per 2 months	4	4.4%	12	11.8%	4	3.7%	20	6.7%
1 book per 1/2 year	2	2.2%	5	4.9%	0	0.0%	7	2.3%
	n=91		n=102		n=107		n=300	

Regarding "low readers" among the students, again we find that more of the students from schools with a central library only (16.7%-) stated that they read little (one book per two months to half a year), compared to only 6.6% of the students from schools with class libraries only and 3.7% of the students from schools with combined libraries.

In terms of how much time students devote to free reading activities, a similar picture emerges (see Table 3) . Much reading - more than two hours per day was done by 18% to 19% of the students. Some 70% of the students in schools with class libraries only devote a half hour to an hour per day to reading, compared to 76.7% of the students in schools with central libraries only and 81.3% of the students in schools with combined libraries. Students who read a half-hour or more per day include 99% of those from schools with combined libraries, 95% of those from schools with a central library only, and 89% of those from schools with class libraries only.

Table 3
Average Number Of Hours Per Day Devoted By Students To Reading By Type Of Library

Reading Time	Classroom Libraries	Central Library	Combined Library	Total
Over 2 hours	17 18.9%	20 19.4%	19 17.8%	56 18.7%
One hour	31 34.4%	42 40.8%	46 43.0%	119 39.7%
.5 hour	32 36.6%	37 35.9%	41 38.3%	110 36.7%
No Reading	10 11.1%	4 3.9%-	1 1.0%-	15 5.0%
	n=90	n=103	n=107	n=300

Students were asked whether there existed at present in their home a book they had borrowed from a library of any sort. Among 23.1% of those whose schools had class libraries only, no book borrowed from any library existed at the moment in their home; the figures were 14.6% for students in schools with central libraries only, and 9.3% for students in schools with combined libraries (see Table 4) . In other words, 91% of the students in schools with combined libraries had a library book in their home, compared to 85% of students in schools with a central library only and 77% of students in schools with class libraries only.

Table 4
Having A Library Book At Home

Having a Library Book	Classroom Libraries	Central Library	Combined Library	Total
No books	21 23.1%	15 14.6%	10 9.3	46 15.3%
From the classroom library	29 31.8%	0 0.0%	0 0.0%	29 9.6%
From the centra library	0 0 0.0%	83 80.6%	94 87.9%	177 59%
From the public library	55 60.4%	25 24.3%	15 14.0%	95 32.0%
	n=91	n=103	n=107	n=301

The percentages of students who had more than one library book in their home were at least 14% of the students in schools with combined libraries, 24% of the students in schools with a central library only, and 32% of the students in schools with class libraries only. A large percentage (over 80%) of students in schools with a central library only had a book borrowed from the central library in their home, and even more (88%) of the students in schools with combined libraries.

In terms of books borrowed from the public library, an almost converse picture emerges. Only 14% of the students in schools with combined libraries had at the time of the study a reading book from the public library, compared to 24% of the students in schools with a central library only and 60% of the students in schools with class libraries only.

A check revealed that 24.3% of the students in schools with combined libraries were registered at the public library, compared to 39.85k of the students in schools with a central library only and 67% of the students in schools with class libraries only. The fact that among students in schools with class libraries only the registration in and borrowing of books from public libraries is higher than among the other two categories of students is probably connected to the fact that the former type of students lack a central library in their school. The lack of a central library in their schools, caused them to look for other source for book, outside of the school.

DISCUSSION

The disparities in reading among students in schools with the different kinds of libraries are not drastic. In reporting on amount of reading, the students in schools with combined libraries score highest, and the students in schools with class libraries only are a close second. With respect to time devoted to reading, similar percentages (18% to 19%) of intensive readers are found. In terms of students who devoted half an hour to an hour per day to reading, the ranking is: combined libraries, 81.3%, central libraries, 76.7%; class libraries, 70%.

The criterion of having a library-borrowed book in the home also finds combined libraries in the highest place (91%), followed by central libraries (85%) and class libraries (77%) . It should be remembered that class libraries are small, and their collections are limited compared to central school libraries or public libraries. However, central school libraries are more accessible to students than public libraries.

It is important to note that the class library project was held while students were in grades 2-3, but may still have exerted an influence the following year, in which the children no longer had class libraries but did have access to a central library. Thus, it may be that a certain contribution of the class library project to children's reading emerges, but the realization of this contribution depends on the existence of a central library in the school.

A class library is not a substitute for a central collection, with its variety and different levels of material, and services of a professional librarian. A class library can only constitute one approach among different approaches that can encourage children reading.

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PROVIDING POTENTIAL FOR PROGRESS: LEARNING SUPPORT FOR STUDENTS WITH SPECIAL EDUCATIONAL NEEDS

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ABSTRACT

This paper considers the purposes, methods, findings and significance of the British Library LESSEN (Learning Support for Special Educational Needs) Project. The focus was on Year 7 students, i.e., in their first year of secondary education (aged 11-12 years), in ten English secondary schools who were on the Special Educational Needs (SEN) register because of their learning difficulties. Case studies were undertaken in 10 schools located in five Local Education Authorities (LEAs). Data were collected from documents, observation and an extensive interview program, both within schools and with LEA and schools library services staff. Work with individual children was also undertaken, supporting in subject lessons and in the SEN base, as well as assisting in the library, to provide an action research element to the investigation. Varying levels of library and staffing were found and recommendations were made as to future progress. The project report, *Learning support for special educational needs* is due for publication in 1997 by Taylor Graham.

CONTEXT

In 1994, when the Learning Support for Special Educational Needs (LESSEN) project began, the field of special needs had assumed considerable importance in England and Wales. It had moved further up the government's agenda and become a focus of attention in schools, through the publication of the *Code of practice on the identification and assessment of special educational needs* (Department for Education, 1994) following the 1993 Education Act. This concern at the national level to deliver a consistent policy for special educational needs (SEN) provision followed on from the introduction of the National Curriculum after the 1988 Education Reform Act—the most sweeping piece of educational legislation in England and Wales since 1944 (Kinnell, 1996).

Both in the literature and in schools, the SEN field is perceived as a rapidly-changing one. It is significant that, at the close of the project when we returned to the 10 case studied schools which provided data for the study, to disseminate findings and to reflect with teachers on their actions through the period of the research, all had implemented changes over the intervening period. Many of these related to practical arrangements, several to making implementation of the *Code* manageable. We also found indications throughout the whole project period that more fundamental change was beginning; there was reassessment of both assumptions and patterns of provision. The project was therefore timely and was able to capture many of the change processes being undertaken in schools.

The research was funded by the British Library and undertaken at Loughborough University Department of Information and Library Studies from June 1994 to January 1996, with an emphasis on the links between school libraries, librarians and curriculum delivery for SEN pupils. Over the past decade the British Library has funded a number of school library research programs in primary and secondary schools, but none have paid specific attention to pupils with special educational needs. Many of the issues considered in this investigation emerged from these studies, so that SEN provision in this project was perceived at the outset to be part of the mainstream concern of all school librarians and teachers. The British library had however identified a gap in research into learning resource support for pupils with special needs, which was reinforced particularly through the work of an earlier investigation of learning resource provision, Delivering the National Curriculum (Heeks & Kinnell, 1994). Even earlier work had also indicated the need to conduct an in-depth study. An investigation of materials and learning strategies appropriate to children with low reading scores was included in the BELL (Berkshire Libraries for Learning) project and reported in *Information resources and skills for pupils with special needs* (Heeks et al., 1988). This showed that there was concern amongst both teachers and librarians over the provision of suitable resources and the most effective exploitation of resources in teaching. There has always been particular impetus from libraries to support those who are disadvantaged (Department of Education & Science, 1978) and this was reinforced during the course of the project by the publication of the Library and Information Services Council, England, Report, *Investing in children*, (Department of National Heritage, 1995).

THE CASE STUDY SCHOOLS

While some of the research questions emerged from the studies noted above there was also an ongoing concern to ensure that educational and library research was conducted in areas which are particularly relevant to librarians, teachers and decision makers in seeking to ensure the optimal use of learning resources in schools (Burgess, 1991).

As part of the first stage of the research the project team therefore liaised with Her Majesty's Inspectorate to identify their perception of the issues, and to assist in the selection of case study local education authorities (LEAs) and schools. Collaboration with schools library services (SLS) (delivered often by public library authorities as agents for LEAs) at this early stage was also essential, as many of these had developed special collections to meet the needs of SEN pupils and had acquired considerable experience of the problems and issues facing schools. Schools library services have been important in supplementing resources in schools for all ranges of abilities and interests, and ensuring their effective organization and exploitation. Although their existence is now under threat following the impact of local management of schools and the consequent budgetary restrictions for SLS (Heeks & Kinnell, 1992), in many parts of the country their support for pupils with special needs remains significant.

The schools selected for the study after this extensive consultation process were from five geographically and socio-culturally diverse local education authorities (Berkshire, Birmingham, Hampshire, Manchester, Suffolk). The profile of the case-studied schools is as follows:

LEA	No. of Pupils	Age Range	Setting
Berkshire	940	11-18	Settled villige with stable population
Berkshire	508	11-16	Market town serving rural area
Birmingham	600	11-16	Inner-city, girls only. 95% Asian intake
Birmingham	1639	11-16	Mixed catchment. Unit for hearing impaired pupils
Hampshire	733	11-16	Rural village. Youth wing & FE unit
Hampshire	930	11-16	Small town on edge of urban centre
Manchester	1150	11-16	Split-site in city suburb
Suffolk	1030	11-16	Inner-city church school; large catchement area
Suffolk	1580	11-19	Suburb of county town. Large sixth form from wide catchment area

Triangulation was achieved by the use of a further 8 associate schools, who contributed data and observations through their librarians. These were also geographically spread across England and Wales. Additionally, in one of the case-studied LEAs data were gathered in one special school and in another data were gathered in the main feeder primaries of a case-studied secondary school.

PROJECT PURPOSES

The LESSEN Project arose from two different sources: concern in schools about effective resource provision for children with learning difficulties, and recognition by The British Library and within the librarianship profession that this was a neglected research area. At the outset, following consultation and the analysis of findings from previous work, the project had three specific purposes, setting out to:

- assess the support needs of pupils within the target group identified (i.e., Year 7 pupils identified by schools as having special educational needs) with special reference to the National Curriculum;
- document good practice in meeting those needs, in terms of materials, staffing and strategies;
- foster collaboration between subject teachers, learning support staff and librarians in curriculum planning and delivery.

From these purposes more specific questions were framed, which were central to the research:

- How is the National Curriculum affecting children with SEN?
- How are these children best supported?
- How are recent perceptions about SEN affecting school structures and programs?
- How are librarians responding to recent initiatives relating to SEN?
- How is collaboration between subject teachers, learning support staff and librarians fostered?
- How do LEA support services affect school responses to SEN?

Given the complexity of the questions and the lack of control that the researchers would have over events during the research process, the case study method was seen as preferable to a questionnaire survey (Yin, 1989). It was also considered important to include some element of action research through the intervention of the research team in facilitating work in schools to develop collaboration (the third project purpose). This had the dual impact of adding further data and gaining support from schools in participating with the project team.

Documents which were analyzed included school prospectuses, school and departmental development plans, library and SEN policy statements, annual reports and (where available) inspection reports from Ofsted (Office for Standards in Education). In each of the case studied schools semi-structured interviews were conducted with the head teacher, deputy, head of special needs/ SEN coordinator, a teacher from each core subject, the librarian and information technology coordinator (i.e.,12 from each school), a total of 96 interviews. The research questions identified above were used as the basis of the interviews, with particular focus on policy, planning and actions. The project was concerned with all Year 7 (aged 11-12 years) SEN pupils being taught within the case studied schools, as interpreted by schools in light of the *Code of practice*. The associate schools, special school and feeder primaries yielded further documentary and interview data.

Data were gathered in schools from September 1994 to June 1995, with an interim analysis completed in August 1995. Dissemination to case-studied schools was then undertaken from September to November 1995. This phase of the project also ensured further reflection on the interim analysis. Data analysis was completed and the final report written between December 1995 and January 1996.

SPECIAL EDUCATIONAL NEEDS IN ENGLISH SCHOOLS AND LEARNING SUPPORT

Defining SEN

In discussing the findings of the project, it is essential, first, to identify what is meant to the various stakeholders by 'special' educational needs: to government through the code of practice and to schools who are charged with implementing it. Parents are a further significant stakeholder group who were not targeted in this study, but whose views were taken into consideration through schools' assessment of their views.

Defining SEN was a key issue. The *Code of practice* uses the same definition of special needs as the 1993 *Education Act*, stating that: "A child has special educational needs if he or she has a learning difficulty which calls for special educational provision to be made for him or her."

A child with learning difficulty is further defined as someone having "a significantly greater difficulty in reading than the majority of children of the same age." From this it can be seen that SEN exist "only within some kind of context of expectations of normality." (Dessent, 1987, p. 9) The National Association for Special Educational Needs (NASEN) produced its own definition in 1992:

> the needs of students which constrain them from the maximum access to the curriculum and the extra curricular activities of a school or institution, together with other resources and facilities which are available to their contemporaries. (National Association for Special Educational Needs, p. 4)

The project schools largely followed the Department for Education definition quoted above, while recognizing that a much wider range of children might need some special treatment on entering secondary school. For example, the feeder schools for one secondary school identified three such categories of children: those who needed to be in a progress (i.e., SEN) group, those who had a specific learning problem requiring some separate attention, and those likely to have difficulty settling into secondary school.

One of the problems which emerged in the study was the vagueness of these national definitions, which appeared as a real barrier to progress in schools in providing more effective learning support: "there is no agreed definition as to what special needs are, and no consensus as to what constitutes good special needs provision." (Dyson & Gains, 1995)

Teachers recognized the lack of consistency, even within the same local education authority, and saw clearer guidelines as a necessary next step. One school noted: "Our selection has been largely intuitive, but now we need more formal criteria. Relative deprivation is important. A child with Reading Age (RA) 9.5 would be deprived in some schools, average in others." And another: "All our children have language needs. About 40% of Year 7 have learning needs. We need criteria for judging support."

Faced with high demand and limited funding head teachers had to make hard decisions about who was special: "A Reading Age of 9 is our cut-off. We do the most we can with the resources we've got. It's budget driven."

The concept of 'special' was not just directed at low achieving children. Nearly all project schools were conscious that the very able also needed support. One school commented: "We define SEN children as those needing additional provision to that made for the majority, whether very able or below average."

Reading age alone was seen as a very restricting measure, excluding many who needed help. One head cast the net even wider: SEN kids are those with baggage, not just learning and physical difficulties. About 50% of our intake find learning and being in school difficult."

In defining who was 'special' and required targeted learning resource support, there were therefore several issues to consider:

- many factors may make it difficult for some children to access the mainstream curriculum;
- very able children may also be constrained by a curriculum which does not match their ability level;
- the problem of trying to make the best use of limited funds.

Developing perceptions

Determining who had special needs in the project schools was dependent not only on the above issues, but also on perceptions which had developed over time. *The Warnock Report* (Department of Education & Science, 1978) gave schools in England and Wales two statistics which are still taken as the norm: approximately 20% of pupils have special educational needs; 2% of pupils are likely to require a statement of their educational needs. However, we found that the percentages of SEN children in 70% of project schools were above the Warnock estimate. Only one school was below, and two had identified as many as a third of Year 7 pupils as having special needs. A number of new entrants had reading ages of only 6 years, and in one case just half a dozen had a reading age equal to or above chronological age.

The LESSEN figures echo the concern of the team which evaluated the Lower Attaining Pupils Programme (LAPP) (Stradling & Saunders, 1991, p. 24). They found that 40% of pupils were within the LAPP remit, and emphasized, as we also found, that the Warnock 20% hides a much greater problem. However, *The Warnock Report* was of great significance for its recommendations on providing for greater integration of children with learning disabilities into the mainstream of education. Despite the continuing difficulty in reaching a clear consensus as to what precisely constitutes special educational needs it marked the beginning of a more individually-centered approach to special education needs provision.

The 1944 *Education Act*, which had established the pattern of schooling in England and Wales until the 1988 *Act*, classified SEN children as 'educationally subnormal'. Later, descriptions such as 'backward readers' and 'slow learners' came into general use, followed by a major change, post-Warnock, to 'special educational needs'. Now there is a dissatisfaction, apparent among both academics and practitioners, with the terms and methods prevalent in the 1980s following on from Warnock (Mittler, 1992). Partly, there is the difficulty of knowing where to draw the line and the realization that in some cases the line is being drawn for reasons quite distinct from educational ones. There is concern now to ensure that every child's learning needs are seen as distinctive, with equal emphasis on supporting each individual.

> There is an element of absurdity in regarding 20% of the school population as special rather than as an extension of individual differences among children. (Dessent, 1987, p. 21)

The simplistic labels of the past have been found not to correspond with the reality of classroom life:

> Neither category nor continuum models can represent complex reality, or provide an adequate basis for decisions about SEN, and more sophisticated theoretical frameworks will have to be explored. (Brown, 1994)

These findings from previous studies were reinforced by comments from the project schools, for example:

> Our philosophy is to widen the whole aspect of Learning Support. In that respect, all children are special. Both the very able and the less gifted need extra support. Then we have

> cause for concern identified over all sorts of problems. There is often a story behind the low achievers. It's wrong to set aside just one group. We don't see a dividing line between SEN children and the rest. There's a continuum of need.

Individuation

There was less a movement towards integration in the project schools, but rather a shift to individuation. This concern to address individual pupils' achievement and to identify barriers to success is also being found in gender studies. One is investigating why boys outnumber girls on special needs registers (Barber & Graham, 1995), an issue which has attracted national attention and also interested some of the project schools, for example:

> We have begun investigating why boys do worse than girls: 60% of girls got GCSE passes A-C this year, but only 35% of boys. Boys are also in the majority among statemented children. The percentages decrease slightly as they move up the school, but often these pupils are still struggling. We use a preponderance of group work, and perhaps that suits girls best.

Many teachers interviewed spoke of the importance of addressing under-achievement as well as the more serious learning difficulties which generally attract greater attention. One of the project authorities, Suffolk, was beginning to look at Year 7 pupils and plot their progress in a Value Added Initiative which received a very positive response from both parents and children.

MANAGING SPECIAL NEEDS SUPPORT IN SCHOOLS

Policy development

How to manage support for SEN children was firstly determined by the schools' philosophies, which were reflected in school policy statements, development plans, and staffing structures. Each of the project schools had some form of policy on special needs prior to the 1993 *Education Act*, and had embarked on revision following publication of the 1994 *Code of practice*. A few schools had completed the task at the time of the fieldwork visits. We found that care was being given to ensuring that policy was owned by all of the school. A continuing thread in policy statements was the recognition that all staff have a responsibility for all pupils, and (conversely) that the SEN unit is a central resource for all staff and pupils. Formulating SEN policy is a prime cross-curricular exercise, as understanding develops within the inter-departmental groups consulting and framing it. It is also a management exercise, as governors and the management team consider the change strategies and resource requirements involved in translating policy into practice.

Funding

The Department for Education accepts a range of models for funding SEN work, and various methods were in operation in the project LEAs. Most importantly, LEAs have to determine how money should be allocated to schools for funding children who are not 'statemented', that is those children whose learning needs are significantly special that they need additional support but are not severe enough that they are individually assessed for a specialist program. Defining SEN children more clearly was seen to be essential to enable allocation of budgets. However, the monitoring of allocations was under-developed. SEN budgets were seen to be under strain, whether for statemented or other pupils. Funds for providing support for pupils with statements were usually held centrally in the LEA, and in one case the LEA expected the school to match the sum per pupil. Comments from schools defined the problem:

> We're under funded for SEN by the Education Department [of the LEA], not the school, but I realize they're under pressure.
>
> There's not enough money centrally [in the LEA] for SEN. Officers see it as a bottomless pit.

The National Curriculum

General attitudes to the new curriculum were less hostile than had been found in a previous study (Heeks & Kinnell, 1994). The National Curriculum (NC) provides a single common language and a single common entitlement (Mittler, 1992) and it was this entitlement aspect which was mentioned most frequently in discussion of the curriculum's suitability for SEN pupils. However, reservations were expressed most by members of senior management teams who felt that it compromised the philosophy of individuation which was now characterizing the SEN debate:

> The NC is a double-edged sword. The strength is that it gives an entitlement to all children, but it's removing flexibility. It wasn't dreamt up with the needs of individuals in mind—either pupils or teachers.

The attitudes of SEN coordinators were generally more favorable. It was felt that SEN children were getting access to a breadth of education not known previously, and that more attention was being paid to adapting work:

> I'm being forced to think how we give access to the curriculum. It was too cosy and lax before. The old remedial departments weren't good. I wouldn't like to set limitations on these children.

Comments from subject teachers showed that they were working hard to make sure the disadvantages of the NC outweighed the benefits, for example:

> The topics we have to do in History are interesting, with follow-up in lots of different forms—visits, designing posters, role play—and that helps children who have problems with reading and writing. I'm working now with S. to design a topic pack on the Civil War, which aims to extend the very bright and be accessible to SEN children.

Teachers were adjusting to the National Curriculum, although many basic resentments lingered. Whatever the merits or demerits of the actual curriculum, the way it was introduced raised many questions and there remained concerns amongst teachers.

The Code of Practice

Opinion on the Code varied not only across schools but within schools, and did not seem to be affected by the extent of support received from the LEA. Typical comments from head teachers were:

> The Code is very prescriptive, very procedure-based. We keep making records saying we're carrying it out, but the energy to deliver may not match.
> The government wants miracles, without putting any money in. We're overwhelmed with systems instead of dealing with kids.

SEN coordinators, too, were generally anxious, in particular that the documentation involved would decrease their contact time with children. Only three of the 10 coordinators interviewed, expressed confidence.

While some staff feel able to take power in their own hands and set their own priorities, regardless of government regulations, it would be wrong not to record the resentment and exhaustion of many teachers. Similar feelings came through in a survey of October 1994 which found that systems in line with the *Code* had already been established in a number of counties in southern England, while "in urban areas, difficulties in following the *Code's* guidance are likely to be acute." (Peter, 1994)

The *Code*, both potentially and in practice, was changing the role of SEN coordinators. Many of the earlier hopes (Bines, 1992) for role development now stand to be fulfilled. In project schools, coordination had become as important as direct teaching, with a prime task being the development of the expertise and confidence of subject staff.

School support systems
The type of support offered to children with learning difficulty reflected school ethos and history. Fullan and Hargreaves have identified two major types of school culture, the individualistic and the collaborative (Fullan & Hargreaves, 1992, p. 53), and project schools were observed to be at different points between these two poles. Teachers have traditionally been taught to be independent and self-reliant, but both the National Curriculum and development of SEN work over the past few years have tended to break down classroom isolation. The Code of Practice is advancing this process.

The two main methods of SEN support currently used are withdrawal from class and help in the classroom. Most project schools operated a mixed economy, but with considerable variation in the proportion of time given to each. Providing for both called for a range of management skills, as the SEN coordinator administered the system, collaborated with subject teachers, advised on suitable approaches, and liaised with parents and the governor/s with a SEN brief. Withdrawal was usually looked on as the least desirable form of support: it was reported that children felt isolated, parents were unhappy about it; a stigma seemed to attach itself to withdrawal however hard staff tried to present the system in a positive light. Two of the head teachers interviewed regretted that it now seemed necessary to apologize for withdrawing children. One expressed this view in the following terms:

> We need withdrawal to be seen as legitimate. Support in the classroom is like giving a child a crutch instead of operating on the knee. Schools have become afraid of withdrawal, quite wrongly. It offers some children the individual attention needed to address their problems.

A number of practical problems surrounded withdrawal. For example, usually children were withdrawn from subjects across the curriculum, yet no attempt was made to enable them to catch up in lessons missed. Then, schools reported it difficult to find an economical way of withdrawing SEN pupils from mixed ability classes: "they're scattered through the year group like pepper and salt." We found that the whole area of withdrawal merited further investigation.

All project schools provided some support in the classroom for SEN pupils, and, overall, this was the method most frequently used. In two schools it had been started with some hesitation, as in this example: "We did have trouble getting into the classroom. People felt threatened. But within six months they were wanting more and more."

A key division was between schools using teachers for subject support and those relying on learning support assistants (LSAs)—known by a variety of names. Just a few schools used both. Choice between the two was dictated partly by principle, partly by finance.

Use of non-teaching assistants was growing, in line with national trends which show a 36% increase in ancillary staff since 1989 (*TES*, 1995). Subject staff were usually enthusiastic, but, here again, reservations were expressed about lack of clarity on the assistant's role. We spent considerable time in support work within classrooms and felt that the effect of support on the progress of individual pupils needs further research. At present, much of the pattern of support is based on received wisdom dating from *The Warnock Report*. There is a strong case for fresh thinking, based on firmer foundations.

LIBRARY SUPPORT FOR SPECIAL EDUCATIONAL NEEDS

There were two sources of library support for schools in managing their SEN provision: school libraries and schools library services.

School libraries
Each of the schools had a well-developed school library resource center which was staffed by a librarian, although not all were qualified. However, the organizational structures in the majority of project

schools were not helpful in enhancing collaboration between the librarian and teaching staff. In only one school was the member of the Senior Management Team responsible for the library also the line manager for SEN provision and information technology (IT): the ideal combination to bring cross-curricular support together for all pupils.

The libraries' policies were short statements which increasingly are seen to be requiring integration with schools' development plans. School targets such as improving literacy, making greater use of IT, or addressing individual needs were being followed up in library plans. Collaboration between subject teachers and SEN staff was growing in all project schools. Cross-departmental library committees operating in nearly half of the schools were valuable for facilitating this. In one school a Resources Committee, chaired by the Head Teacher, covered the library, IT and reprographics and looked at whole-school issues. A tangible outcome was a Resources Handbook.

The contribution made to school planning by school librarians in the project schools was, however, variable. Where a teacher had a responsibility for the library, the library assistants took little part in planning. Qualified librarians were more heavily involved, especially in the two schools where the librarian had head of department status. There has been considerable improvement, though, since 1984, when it was seen as necessary to recommend that every school library should have a policy with clear objectives (Office of Arts & Libraries, 1984) and the *Ofsted Handbook* now contains a page of guidance setting out expectations of an effective library (Ofsted, 1995).

The funding of each of the libraries had been maintained despite the financial difficulties faced by all schools in 1994-5, and three of the libraries had recently been extensively refurbished and qualified staff engaged. Two other schools were advertising for chartered librarians, with both posts linked to extra expenditure on accommodation and materials. The accommodation offered was of a high standard and there were many signals to 'non-bookish' children that the library held a variety of things to interest them. All libraries were attempting to provide materials in a range of formats: magazines, books, videos, audio-tapes, compact discs, CD-ROMs. The majority used a computer system for catalogues and loan records, and computer facilities were available in the library or in an adjoining suite, with two schools each providing 15 machines.

Involvement in induction for Year 7 pupils was a common feature of library support for SEN work. Depending on Year 7 organization, librarians either planned separate sessions for SEN children and their specialist teacher or differentiated work to be undertaken, helped by the SEN coordinator. Enquiry skills programs could be substantial, as in the school which had a well-developed system taking two periods a week in Years 7, 8 and 9 and run on team-teaching lines. While the focus was on information skills, there was also considerable promotion of recreational reading, usually undertaken jointly with the English Department. One school had an 'Explore a book' scheme operating for Years 7 and 8, which focused on 20 authors for each year group, with a separate collection for SEN children. Many other library activities were observed, e.g., a homework club run after school and a twice-weekly reading club run by the SEN coordinator. There was increasing integration of the library both in the work of the school generally and in the work of the SEN department specifically. Support in providing appropriate materials, helping with in-service education and training of staff, and importantly working with individual children, were further keys to successful library support.

Differentiation was a major interest and learning support staff were in demand as partners in adaptation of tasks and materials. Developing more slowly was their collaboration with the school library, although in previous research we identified the core role school libraries can take in curriculum planning and delivery was identified (Heeks & Kinnell, 1994). Indeed, the idea of the inclusive library, hospitable to all, has been accepted for decades. The inclusive library serves the individual needs of all pupils, whatever their abilities or difficulties, and of the teachers, governors and parents who make up the school community. It follows that it takes a holistic view of needs, embracing the recreational, pastoral and academic, and offers access through a range of media, services and facilities. The inclusive library is cross-curricular, contributing to each subject and helping to make connections between them. This vision has emerged again in connection with innovation relating to special needs.

> Latterly, some schools...have developed out of their libraries and information technology suites resource centers housing books, curriculum materials, microcomputers, audio-visual equipment and, above all, teaching assistance. Such centers tend to be accessible to pupils throughout the school day on demand, and support a process of teaching and learning in the ordinary classroom which emphasizes pupil responsibility for managing the learning process. (Dyson, 1992)

During the period of the project there was evidence of some progress towards the development of libraries as learning centers on this model. Staffing improved, with the appointment of qualified librarians in 70% of the case-studied schools. Structures which brought the IT coordinator, librarian and SEN coordinator together in a Learning Support Department managed by a member of the SMT, became more usual. As one head commented:

> It seemed a natural combination, to bring IT and the library, which are both in danger of isolation, together with learning support. All three are cross-curricular. Our philosophy is to widen the whole aspect of learning support.

Two schools had decided to bring together the resources in the library and SEN base, and a third was considering such a move, which built on librarians' skills and orientation to individual service.

Schools Library Services

All the project LEAs except Manchester operated a SLS, offering support in terms of advice, materials and training. Overall, SLS in England and Wales have suffered financially over recent years (Creaser, 1994). There was wide variation in the funding of the project authorities' SLS, partly linked to the primary aims of the services. Staffing levels reflected the different approaches to schools' needs. The range of support offered by Berkshire SLS reflects the nature of this wide-ranging response to schools:

- Resources for Learning: topic boxes; lending and exchange service; video library.
- Resources for Teachers: professional practice collection; exhibition area; enquiry and request service.
- Reading Point: promotions of reading and libraries through events and pre-packaged displays and loans.
- Advisory Services: pre- and post inspection reports and planning.
- In-service Training Programmes: A mix of free and charged sessions.

SUPPORTING SPECIAL EDUCATIONAL NEEDS: RECOMMENDATIONS FOR THE ROLE OF THE LIBRARY

Of the six main issues investigated in this research, a key consideration was how the National Curriculum affected those children defined as SEN. The study was primarily concerned with how libraries and learning resources could best support pupils and their teachers, so that the impact of the curriculum was a major concern. The National Curriculum was conferring entitlement on SEN pupils, although the removal of flexibility was seen as a difficulty. Libraries and librarians have an important role in ensuring that all children have access to those materials which will enable them to exploit their potential to the full and meet the demands of the curriculum. Flexibility in teaching may partly be retained by the use of more imaginative materials and methods. Libraries can support this in various ways: through the provision of appropriate books and other materials, including audio-visual, and through the use of information technology, especially the Internet. The research indicated that further work was needed to explore this potential in particular. Current research at Loughborough University is investigating the place of the Internet in supporting secondary pupils' learning, across the curriculum, and involving librarians and teachers in developing common strategies (Wild & Kinnell).

The project identified several further ways in which libraries and librarians within schools could support learning for SEN pupils. Many of the activities consequent on the Code of Practice open the way for library initiatives. For example, the greater participation of parents in children's reading calls out for library support. The strengthening of links with primary schools and the establishment of cross-phase pyramids and consortia have brought improvements in practice which need to be matched by similar library initiatives. The widespread concern in school to provide appropriately for very able children has an obvious relevance to library resources and programs which, so far, has seldom been recognized.

In the rapidly-moving field of special needs, the role of school libraries looks set to grow. Their contribution can be advanced through the following:

- The librarian's awareness of school aims and initiatives, and of education developments nationally;
- The librarian's knowledge of both the children served and the resources appropriate to them;
- A library development plan which is linked to the School Development Plan;
- Staffing structures which encourage collaboration;
- A library environment which is both welcoming and stimulating;
- A wide range of stock relevant both to the formal curriculum and to children's personal interests;
- Programs which assist development of information skills across the curriculum;
- A library culture of cooperation and collaboration.

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THE RELATIONSHIP OF SCHOOL MATERIALS AND RESOURCES TO READING LITERACY: AN INTERNATIONAL PERSPECTIVE

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ABSTRACT

There is great interest in the effect of school resources on academic achievement, but it is seldom that an opportunity arises in which this relationship may be examined in an international milieu. This paper presents the types of resources available in the 27 countries participating in the International Association for the Evaluation of Educational Achievements (IEA) Reading Literacy Study, and explores the relationship of the most pertinent variables to achievement. More particularly, the focus is on school and classroom libraries, their description and use, and on classroom teacher's practices as they relate to library use.

In my fourth year of public school teaching I was appointed as Head Teacher of a three-room rural school with about 100 students. In this position I was responsible for all aspects of running the school including spending a small budget on materials, supplies, and books. A locked hallway cupboard approximately 30 inches by 30 inches by 12 inches deep contained what was termed "the library" and it had traditionally been accessible to students at a few designated times for "checking out" books, so I was told. Needless to say, I found the situation appalling, and two years later when graduate school beckoned, I was pleased to leave the school with three classroom libraries each approximately three times the size of the original. How many books were in those spaces do you suppose?

Many years later having earned two graduate degrees in Reading Education I became Head of the Department of Language Education at the University of British Columbia, and what should I find located there but a School Librarianship program under my supervision! And when I became the Research Coordinator for the BC component of the IEA Reading Literacy Study in the early '90s, and in this capacity gained access to information from 32 different countries, numbers of "books" again took on a new significance. While "literacy" was the focus of attention in the study, I casually mentioned this wealth of data regarding resources to Anne Clyde who indicated a keen interest in it, and encouraged me to tease out those aspects of interest to librarians. And that brings us to the topic of this paper and to my presentation at the IASL-ATLC Conference in Vancouver.

You will have noticed that the word "books" was used inside quotation marks since it oversimplifies what libraries are all about, but it is the stereotyped symbol of libraries in common use. As I was writing this article the University of British Columbia opened a new library building and celebrated its faculty authors; the *Vancouver Sun* headline read "It's a big week for books at UBC." Therefore it is with "books" and "magazines" that I wish to begin my story; then we will move to the uses of school and classroom libraries; then to teachers' practices; and finally we will examine some vignettes relating various variables with achievement. This approach is supported by the type of data gathered as part of the IEA Reading Literacy Study of 1991and first reported in *How in the world do students read?* (Elley, 1992).

THE IEA READING LITERACY STUDY

Before proceeding it is necessary to sketch in some of the details of the study in order to contextualize the data. In 1990-91 about 210,000 students and over 10,000 teachers from 32 countries (more correctly jurisdictions) participated in the study of reading literacy sponsored by the International Association for the Evaluation of Educational Achievement, an organization based in The Hague, that conducts international research in many aspects of education. The general purpose was to show how well nine-year-olds (referred to as Population A) and 14-year-olds (referred to as Population B) read, and to identify which student, teacher, and school attributes were related to the development of literacy. While 32 jurisdictions participated not all did so at both levels and hence when dealing with Population A we have only 27 countries. For a variety of reasons, the age criteria resulted in approximately half the countries testing in Grades 3 and 8, and the other half in Grades 4 and 9, and one country (New Zealand) tested students in Grades 5 and 10. Various attempts have been made to address this dilemma since it has a potential impact on the interpretation of the results. The term "reading literacy" was coined for this study and means "the ability to understand and use those written language forms required by society and/or valued by the individual." The focus was on material commonly found in the home, school, the community, and the workplace in the participating countries. Students responded to three types of texts, or domains, which were referred to as narrative, expository, and document. For the 9-year-olds a test of word recognition was included in order to check whether weaknesses in comprehension were related to the inability to decode highly familiar words. Additionally three questionnaires were administered. One was given to students and asked about personal information and interests, details about home, about reading habits, about homework, and about the reading instruction they were receiving. A second was given to teachers and it inquired about their educational background, about the class being tested, about teaching activities, about aims of reading instruction, about the classroom and school libraries, and about school organization. The third questionnaire asked principals about their training, about community resources, the school library and resources, about instructional time, and about the principal's role. All instruments had input from representatives of the participating jurisdictions, a steering committee oversaw the process, and pilot studies in most countries preceded the formation of the final instruments. The international data is aggregated at the school level and most countries sampled approximately 150 schools (range 70-298; mean 156); samples were weighted to assure the desired level of accuracy.

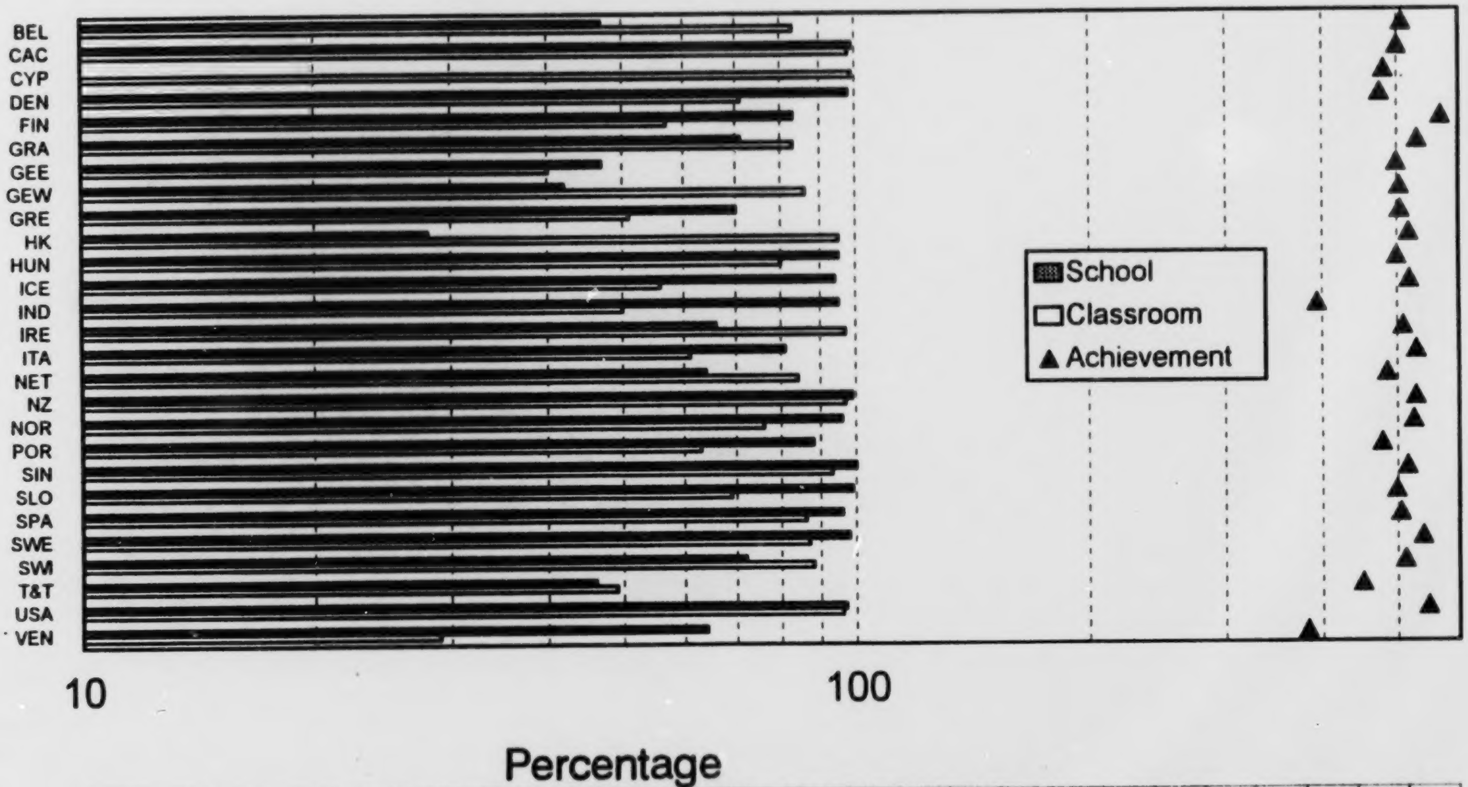
Clearly this study has produced a wealth of information which cannot be reported within the parameters of this presentation, and therefore the emphasis will be on the nine-year-olds (Population A) which are typically in grade three or four in most countries. Details of a number of aspects of the IEA study have been reported elsewhere (Froese, 1995a; Froese, 1995b).

SCHOOL AND CLASSROOM LIBRARIES

Before tackling the issue of library size it seemed important to establish whether schools had libraries since a range of countries from economically poor to well-off participated in the study. Further, students came from small rural areas as well as large urban ones. The relevant geographic information is presented graphically in Table 1 and 2.

Table 1 - Percentage of Schools Having Libraries & Classrooms Having Libraries & Achievement

IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	GRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
School	47	99	0	98	83	71	47	42	70	28	95	94	95	66	81	64	99	96	88	100	99	96	98	72	46	97	64
Classroom	83	98	99	71	57	83	40	86	51	95	80	56	50	97	61	84	97	76	63	93	69	86	87	88	49	96	29
Achievement	507	500	481	475	569	531	499	503	504	517	499	518	394	509	529	485	528	524	478	515	498	504	539	511	451	547	383

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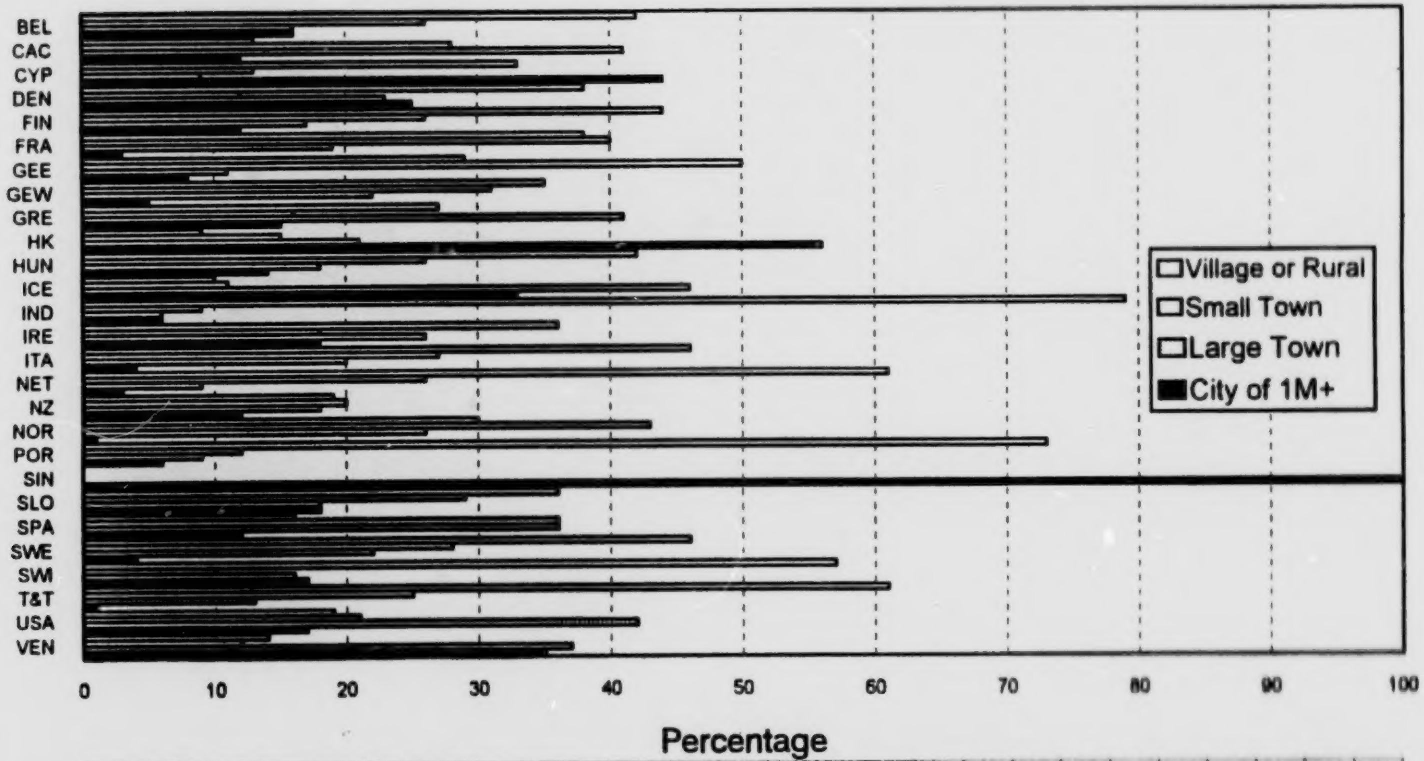
Table 2 - Type of Community Served by School

IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Village or Rural	42	13	33	38	44	38	29	35	27	9	42	10	79	36	46	61	19	30	73	0	36	16	46	57	61	19	14
Small Town	26	28	13	12	26	40	50	31	16	15	26	11	9	18	27	26	20	43	12	0	29	36	28	10	25	21	12
Large Town	16	41	9	23	17	19	11	22	41	21	18	46	6	26	20	9	18	26	9	0	18	36	22	16	13	42	37
City of 1M+	16	12	44	25	12	3	8	5	15	56	14	33	6	18	4	3	12	1	6	100	18	12	4	17	1	17	35

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A careful study of the data in Table 2 indicates that, for example, in six countries approximately half of the schools are "village or rural" in location (Indonesia, Italy, Netherlands, Portugal, Sweden, Switzerland, Trinidad & Tobago), whereas only two jurisdictions (Hong Kong, Singapore) are primarily urban "city of 1M or more". The majority of countries have half or more of their schools in "village or rural" or "small town" settings. This information may assist in understanding the data with respect to book holdings.

According to teachers' estimates (see Table 1) about half the countries have school libraries in virtually every school (e.g. over 90%); on the other hand in six countries less than half the schools have school libraries (the exception is Cyprus which reports all books at the classroom level). However, the presence of a school library is only part of the picture since the size of the collection is the better indicator of resources, and that is discussed under the next heading. Only in seven countries are classroom libraries found in virtually all schools (e.g., over 90%) although in most countries over half the schools have classroom libraries with the exception of Venezuela in which only 29% of schools have them.

It is also instructive to look at the library visitation frequency (Table 3) and the percentage students borrowing books from school and classroom libraries (Table 4). In approximately half the countries most students (90%+) borrow books from the school library (in Cyprus this applies to the classroom level library since it does not report school libraries). And the use of classroom level libraries is considerably less, although their real use may be hidden by this statistic: that is, they are used for classroom reading and these books are not necessarily taken out. According to the reports of teachers (see Table 3), only about one-third of 9-year-old students visit school libraries at least once per week, and a very small percentage visit the library more frequently. Even more discouraging is the percentage of students "hardly ever" visiting the school library—25% averaged over all countries, but over 30% in 11 countries!

SIZE OF SCHOOL AND CLASSROOM LIBRARIES

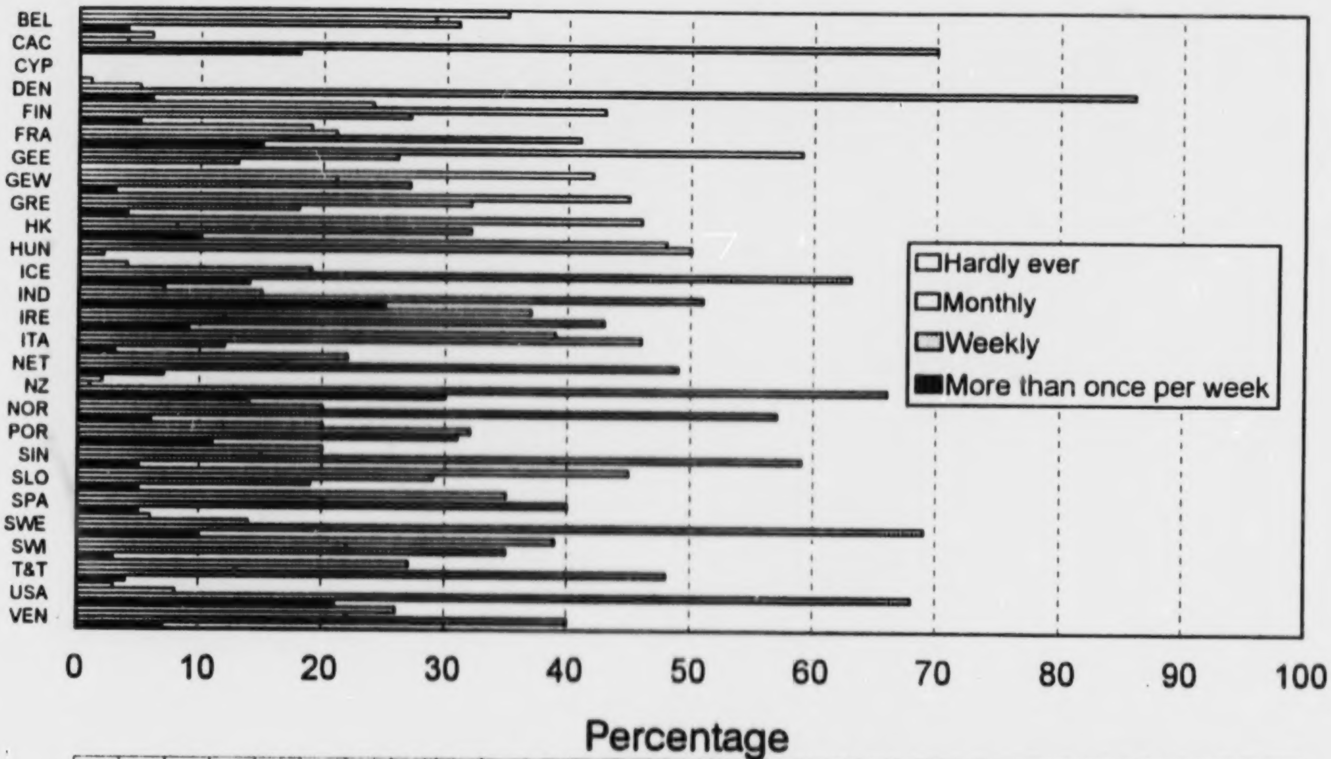
Estimating the number of books or magazines in a school or classroom library is not an easy matter as it turns out. Such information was requested of teachers and of principals; teachers were asked to select a range into which their school library fell (e.g. increments of 20 to a maximum of "100 or more"), principals to estimate the number of volumes. This information is presented in Tables 5, 6 and 7.

In an attempt to further understand the relationship of library size and socioeconomic variables, the top 10 and the bottom 10 countries on the Composite Development Index (CDI) were analyzed. This index, similar to the Human Development Index was developed for the IEA study and consists of six components—Gross National Product per capita, public expenditure per student, life expectancy, percent low birth weight, newspapers per 1000 population, and percent of adult literacy--indicators of economy, health, and literacy. Table 8 presents the 10 highest ranked countries on the CDI--Switzerland, Sweden, Norway, Iceland, Finland, United States, Canada (BC), Netherlands, West Germany (this study was initiated before Germany's reunification), and Denmark, and the 10 lowest ranking countries in the study--Indonesia, Venezuela, Portugal, Hungary, Trinidad & Tobago, Greece, Cyprus, Singapore, Spain, and Hong Kong, along with the expenditures per student in terms of US dollars and the percentage of schools having school and classroom libraries.

In general there is a positive relationship in the percentage of schools having school and classroom libraries and expenditures per student, especially when the highest and the lowest countries on the CDI Index are compared. The average expenditure for the highest ranking countries is US$ 3,964 whereas the average for the lowest ten countries is US$ 773; the average number of books per school library is 3,426 for the top schools and 1,637 for the others. However there are a few exceptions to the generalization since in Spain, Singapore, and Hungary relatively high levels of libraries are present in spite of lower expenditures per student.

Table 3 - Percentage Visiting School Library

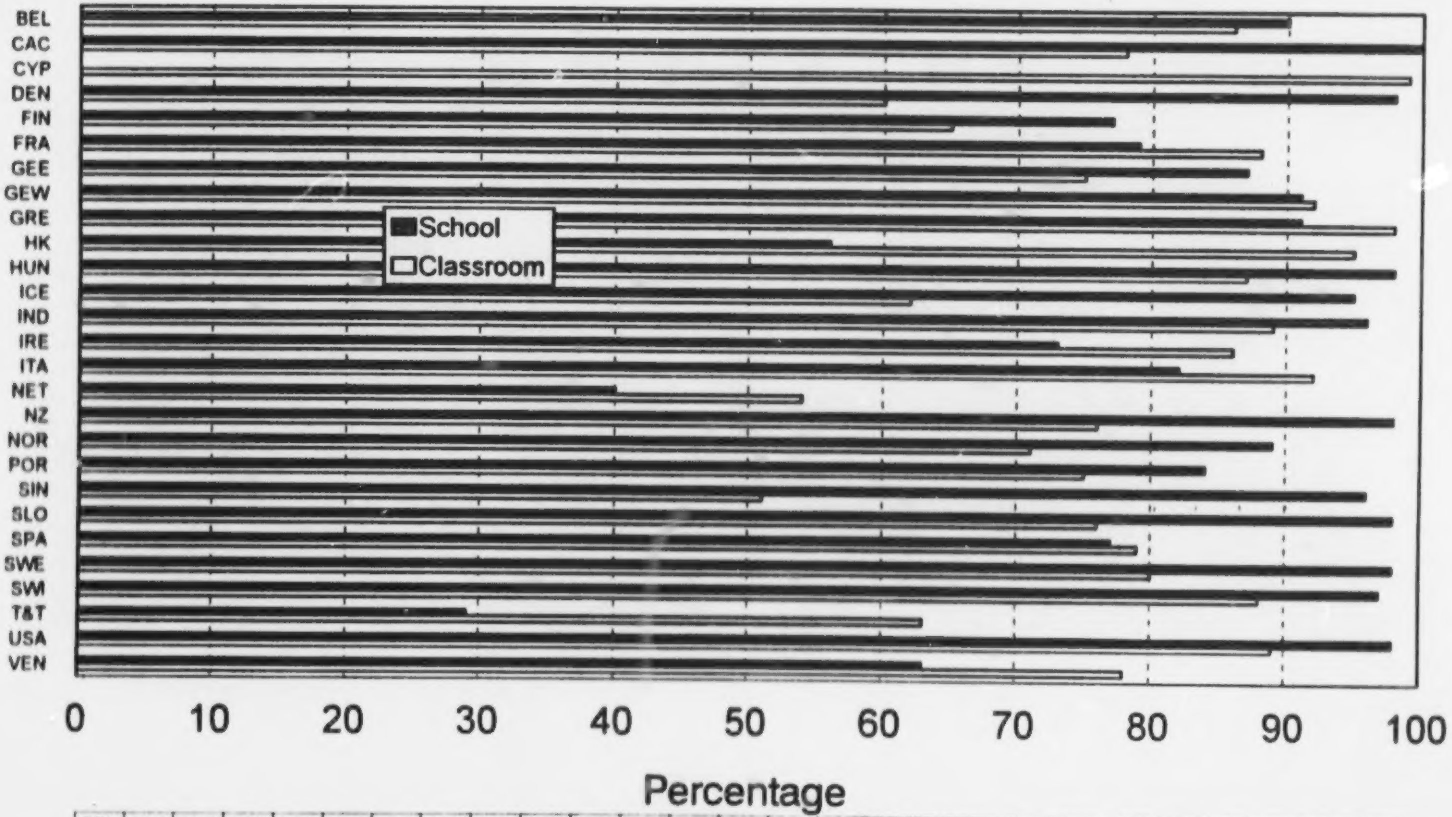
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Hardly ever	35	6	0	1	24	19	59	42	45	46	48	4	7	37	39	22	2	14	20	20	45	35	6	39	27	3	26
Monthly	29	4	0	5	43	21	26	21	32	8	50	19	15	12	46	17	1	20	32	15	29	20	14	22	13	8	22
Weekly	31	70	0	86	27	41	13	27	18	32	2	63	51	43	12	49	66	57	31	59	19	40	69	35	48	66	40
More than once per week	4	18	0	6	5	15	0	3	4	10	0	14	25	9	3	7	30	6	11	5	5	5	10	3	4	21	7

Table 4 - Percentage Borrowing Books from School Libraries & Classroom Libraries

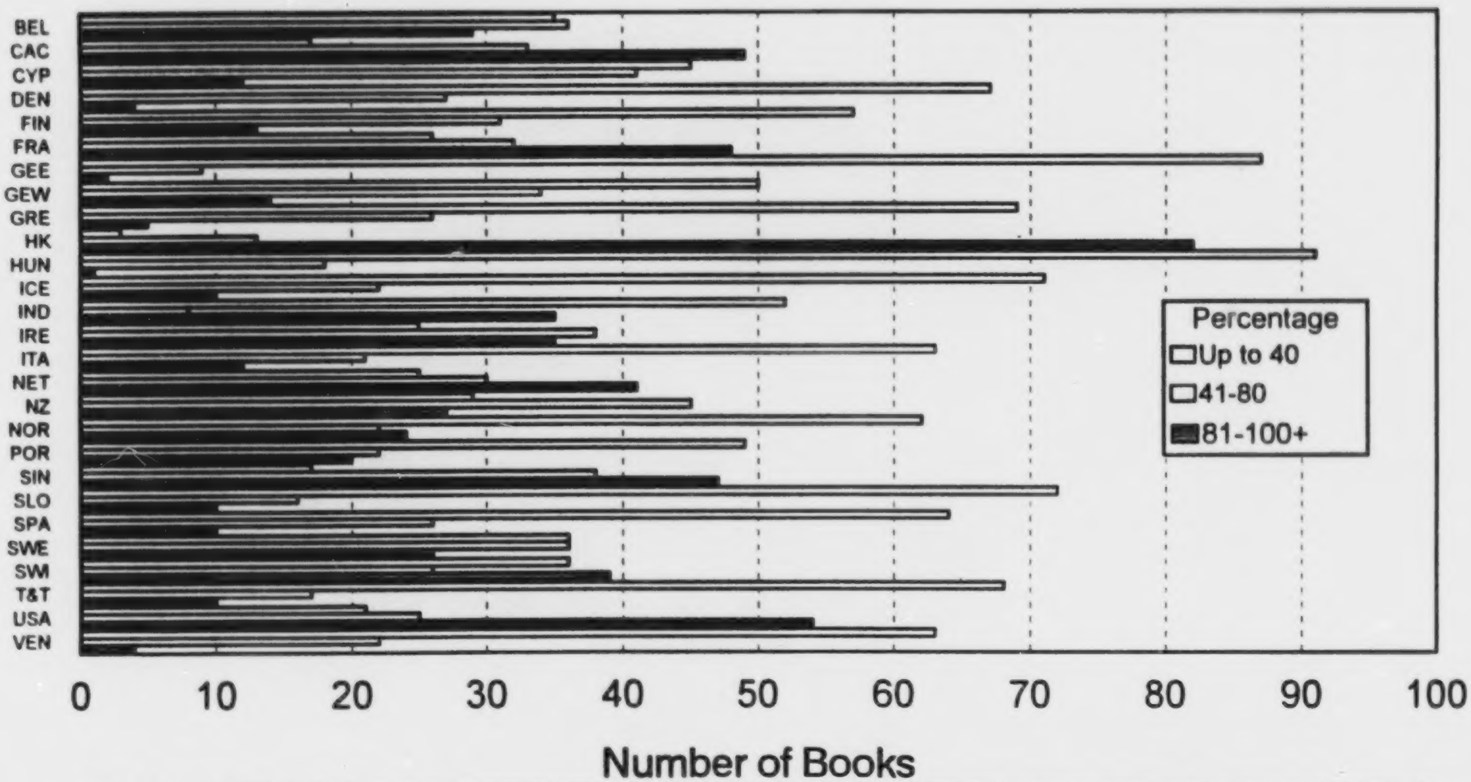
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
School	90	100	0	98	77	79	87	91	91	56	98	95	96	73	82	40	98	89	84	96	98	77	98	97	29	98	63
Classroom	86	78	99	60	65	88	75	92	98	95	87	62	89	86	92	54	76	71	75	51	76	79	80	88	63	89	78

Table 5 - Books in School Library

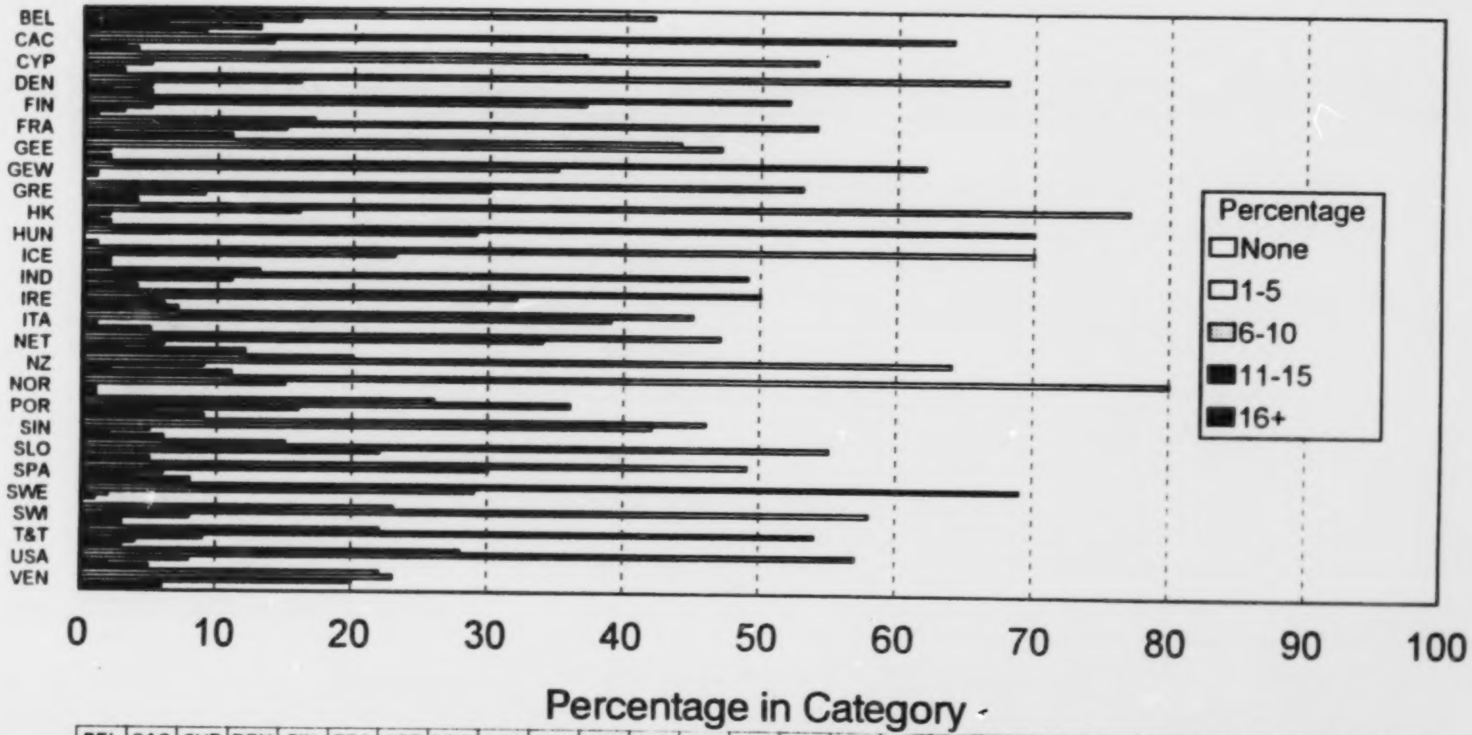
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Up to 40	35	17	45	67	57	26	87	50	69	3	91	71	52	25	63	25	29	62	49	17	72	64	36	36	68	21	63
41-80	36	33	41	27	31	32	9	34	26	13	18	22	8	38	21	30	45	22	22	38	16	26	36	26	17	25	22
81-100+	29	49	12	4	13	48	2	14	5	82	1	10	35	35	12	41	27	24	20	47	10	10	26	39	10	54	4

Table 6 - Magazines and/or Newspapers in School Library

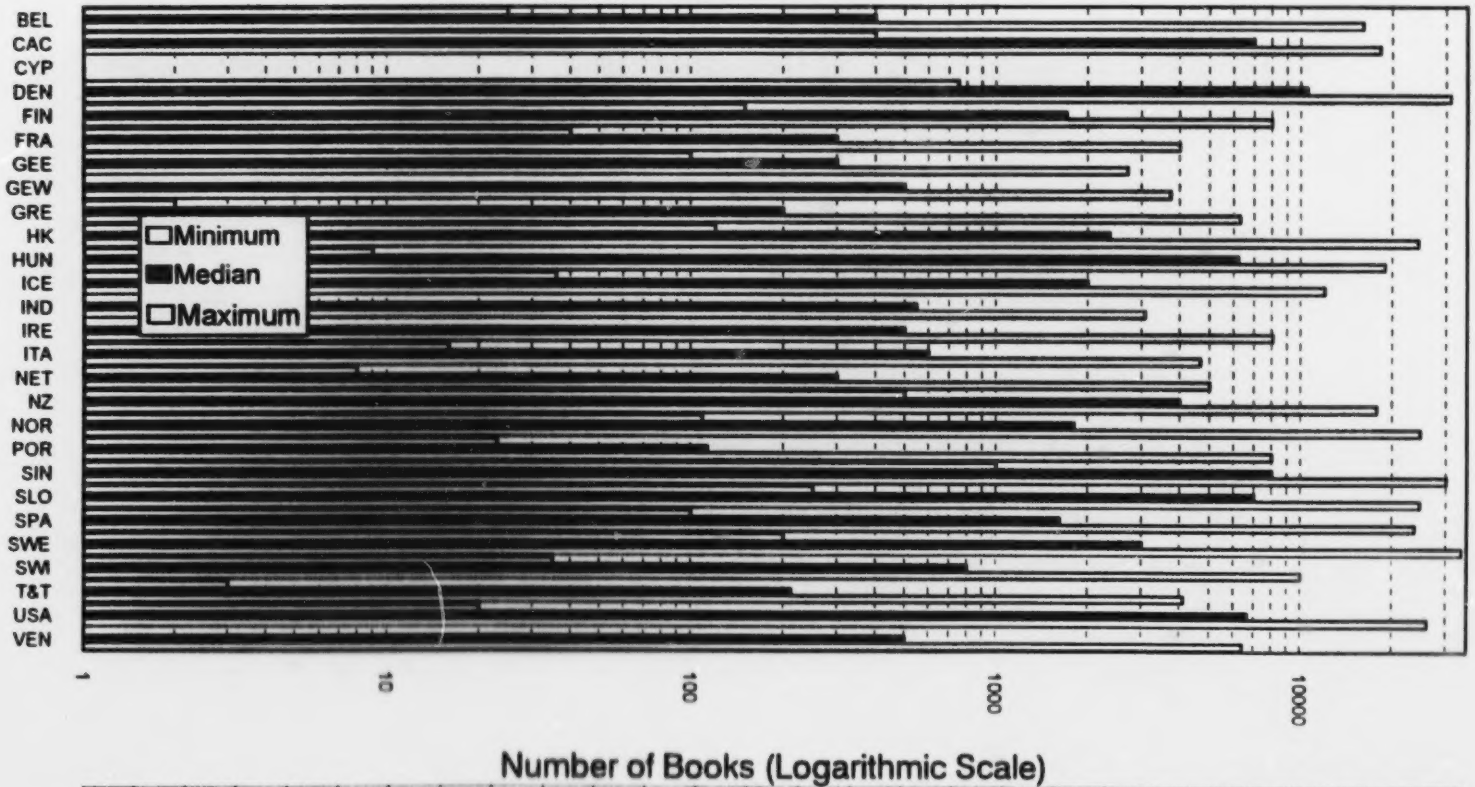
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
None	22	9	37	68	52	17	44	62	53	77	70	70	13	50	45	47	20	80	26	46	15	49	69	23	22	28	22
1-5	42	64	54	16	37	54	47	35	30	16	29	23	49	32	39	34	64	15	36	42	55	30	29	58	54	57	23
6-10	16	14	5	5	5	15	2	1	9	2	0	2	11	5	1	6	9	1	16	5	22	6	2	8	9	8	20
11-15	6	3	0	2	3	2	0	1	1	1	0	2	0	6	1	3	2	1	5	2	0	4	1	3	4	2	6
16+	13	4	3	5	1	11	2	0	4	2	1	2	4	7	5	12	11	1	9	6	5	8	0	3	3	5	6

Table 7 - Principal's Estimate of Books in School Library

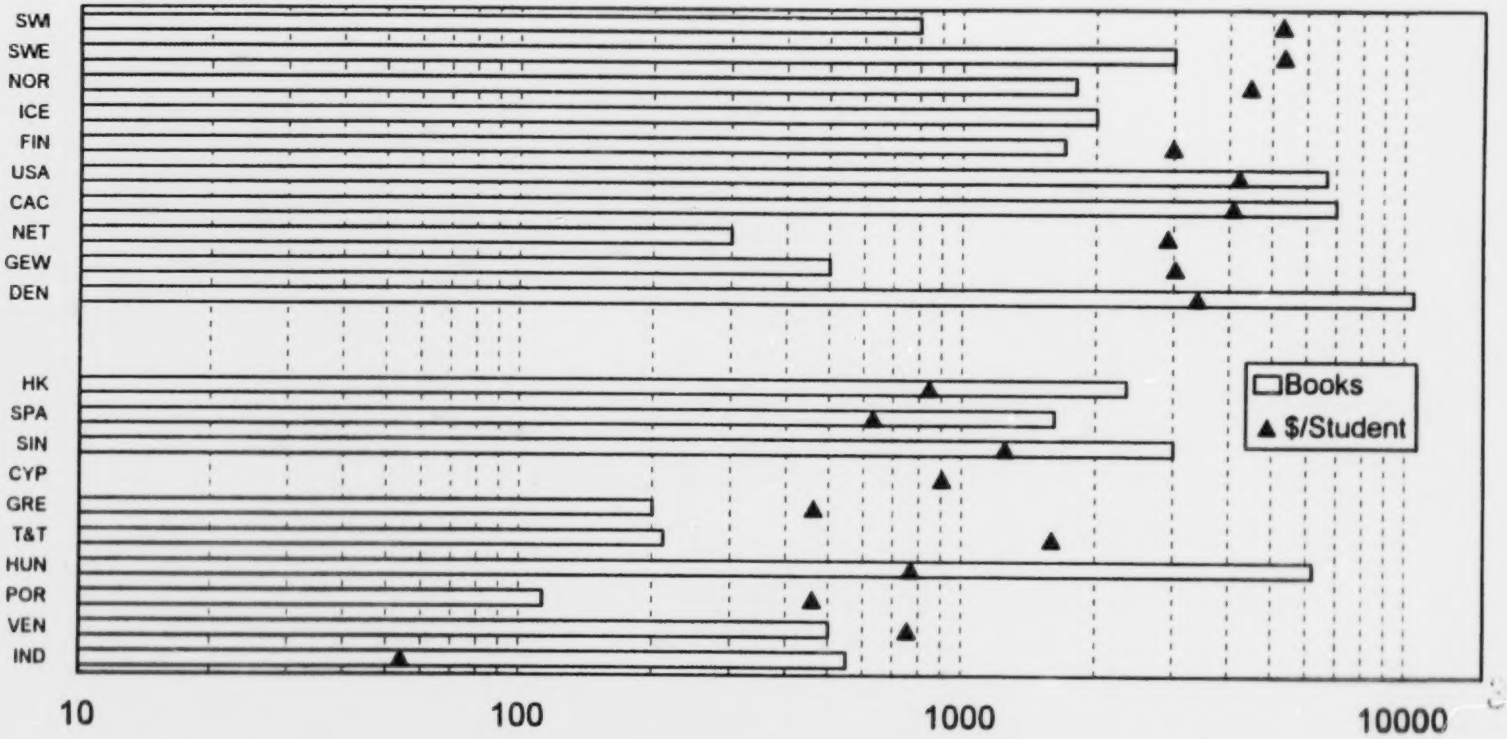
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Minimum	25	400	0	750	150	40	100	0	2	120	9	36	0	0	16	8	500	109	23	1000	250	100	200	35	3	20	0
Median	400	7000	0	10500	1700	300	300	500	200	2350	6200	2000	548	500	600	300	4000	1800	113	8000	7000	1614	3000	800	212	6657	500
Maximum	16000	18263	0	31000	8000	4000	2700	3720	6300	24250	18865	12000	3083	8100	4668	5000	17750	24691	8000	30000	24600	23700	33814	10000	4100	26000	6430

Table 8 - Books in School & Classroom Libraries & Education Expenditure per Student

10 Highest & 10 Lowest Countries on Composite Development Index



Books in School Library & US$/Student Expenditure

	SWI	SWE	NOR	ICE	FIN	USA	CAC	NET	GEW	DEN	HK	SPA	SIN	CYP	GRE	T&T	HUN	POR	VEN	IND
Books	800	3000	1800	2000	1700	6657	7000	300	500	10500	2350	1614	3000	0	200	212	6200	113	500	548
$/Student	5274	5317	4462	0	2989	4220	4096	2910	3021	3390	843	630	1252	902	462	1600	768	459	756	54

Teachers' estimates of books, magazines, and newspapers in the school library (see Table 5 & 6) are somewhat different from the estimates made by the school principal in Table 8. The percentage of libraries in the "100 or more" range is depressingly small—only nine countries report over 25% of schools in this category—however, it must be remembered that the majority of schools are in rural locations. According to these reports the majority of countries have school libraries in the under 60 book categories! The situation for magazines and newspapers is equally discouraging since most countries carry 5 or less per school library.

CLASSROOM PRACTICES BY TEACHERS

In this section we turn our attention to the classroom practices of teachers which are related to the uses of libraries. Since it is assumed that teachers of 9-year-olds know something about children's books, it is interesting to see if they read children's books and if they read to children in their classes—both good modelling behaviours. Table 9 documents the frequency of reading children's books, and it appears that in about one-half of the countries 30 percent or more teachers read children's books on a "weekly or more" basis, and in most countries they read them on a "monthly" basis. Table 10 shows that in nine countries over half the teachers read to children "daily," and in another 10 countries over half the teachers read to children "one or two times per week." Unfortunately in each country a small number of Grade 3 and 4 teachers "almost never" read to children.

It also seems important to know whether teachers instruct students in library skills and whether they encourage them to use the library. Table 11 indicates that in about one-half the countries one-third of the teachers provide library skill training "1 or 2 times per week" whereas in the majority of the countries about one-quarter of the teachers teach library skills on a "monthly" basis. A sizable proportion of teachers in most countries "almost never" teach library skills. In Table 12 we see the frequency with which teachers in each country encourage student to use the library. In over half the countries about one-third of the teachers encourage students to use the library "almost daily" and in most countries about one-third of the teachers encourage them "one or two times per week." The contrast between the information in the two tables seems to suggest that more "preaching" then "practicing" is occurring.

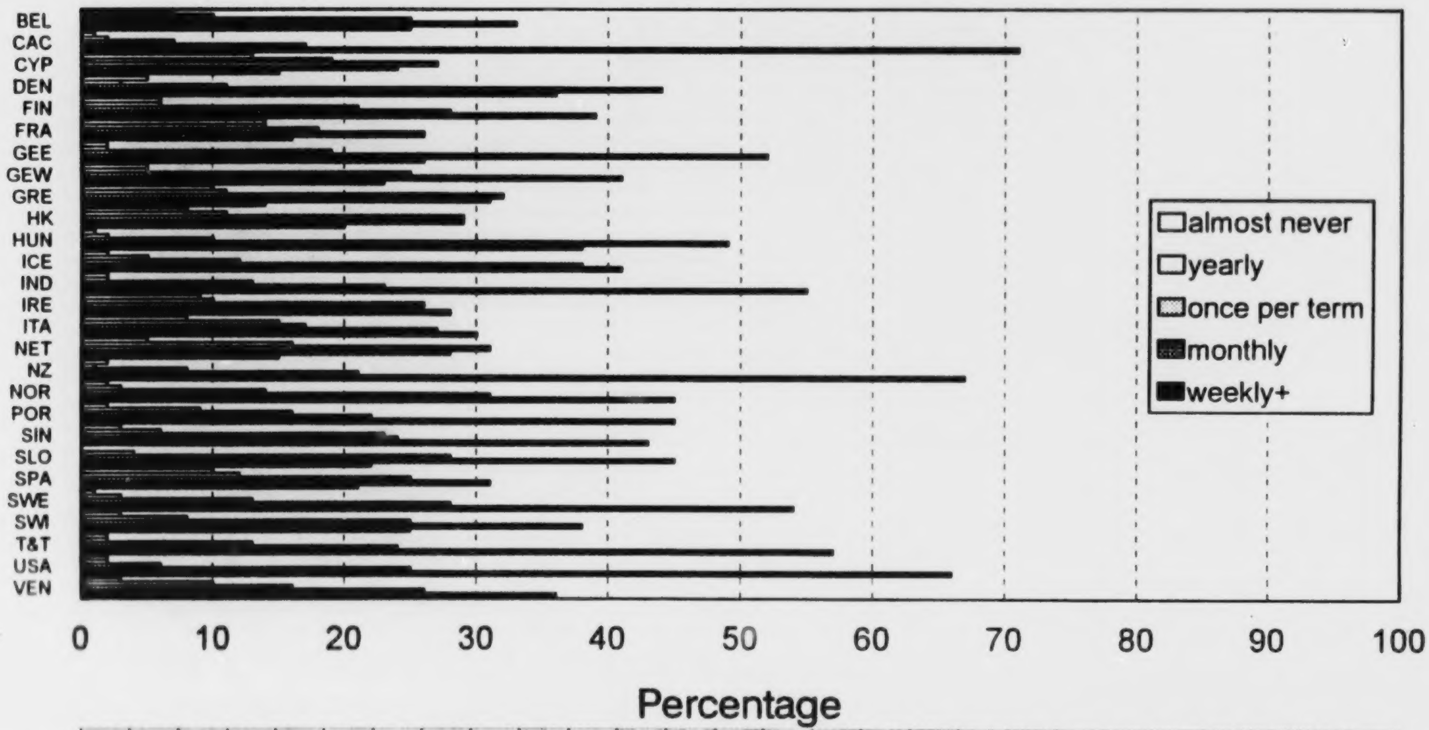
Table 13 indicates that teaching children to choose their own books is not rated highly as an aim of instruction. Only a small percentage of teachers in each country "agree" that this is an important aim, and a small proportion "disagree" that it is an important aim of instruction. Table 14 shows that assessing students' reading interests is something that over one-half of teachers in most countries do on a monthly basis, and another one-fourth of teachers in one-third the countries do on a "once per week or more " basis. The majority of teachers can be said to assess students' reading interests once per term or more frequently.

RELATIONSHIP BETWEEN ACHIEVEMENT AND SELECTED VARIABLE

In order to consider the relationship of reading literacy achievement to selected library variables it is necessary to have more specific data than was available to the writer with respect to all participating countries. Therefore we turn now to data relating to Canada (BC) which represents a jurisdiction exactly at the international mean of 500. Approximately 2,682 students in Grade 3 formed the sample for British Columbia with 157 classrooms participating (the weighted number used in calculation, however, was 142) and their reading literacy achievement was 502 for Narrative, 499 for Expository, and 500 for Documents (average 500 over three domains). A follow-up study indicated that had the test been given to Grade 4 students the mean score would have been 552, and if give to Grade 5 students 586. At the Grade 3 level about 10% of the teachers are male and about 90% female; English is the mother tongue of about 90% of the teachers and other languages represent about 10%. The average teacher has about four years of university training, and about 13 years of teaching experience.

Table 9 - Teachers Reading Children's Books

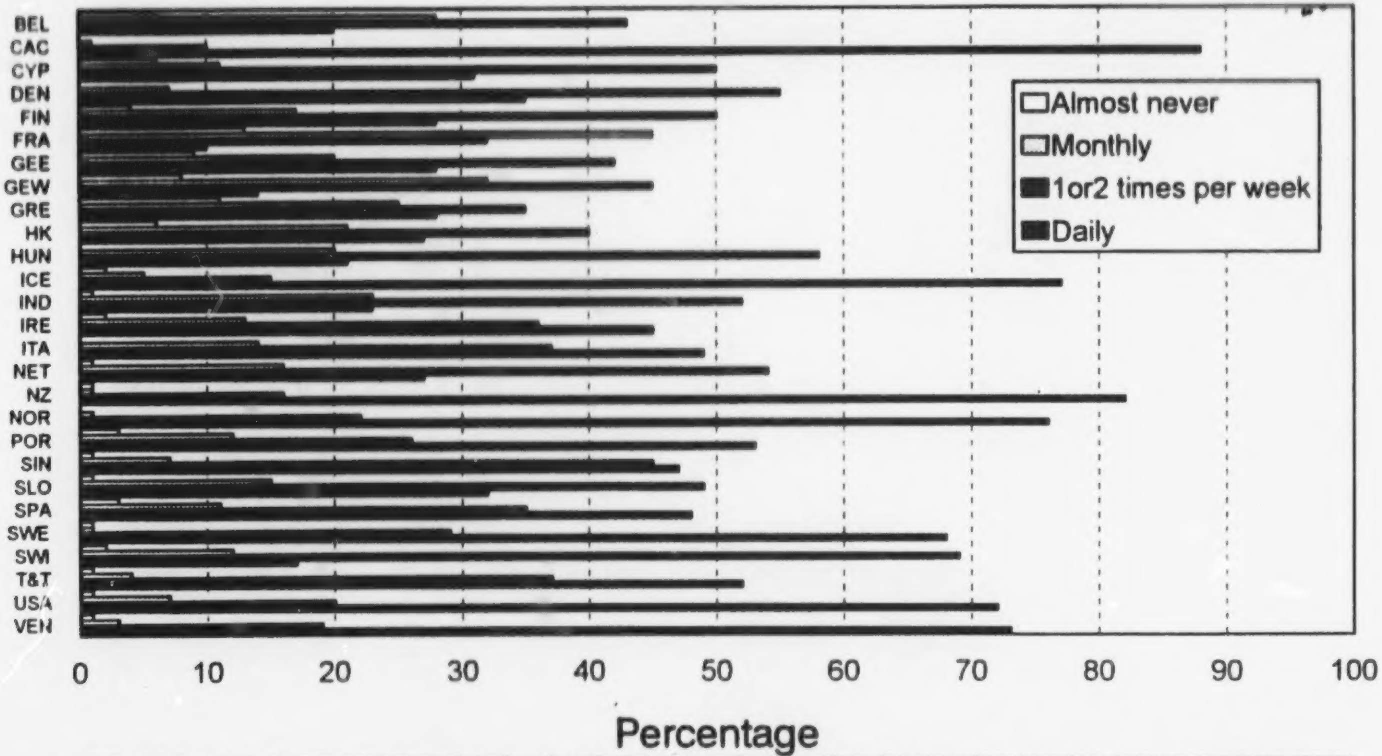
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
almost never	7	1	13	5	6	14	2	5	10	8	1	2	2	9	8	5	2	2	2	3	0	10	1	3	2	2	3
yearly	10	2	19	3	6	14	2	5	11	11	2	5	2	10	15	16	1	3	9	6	4	12	3	8	2	2	10
once per term	25	7	27	11	21	18	19	25	32	29	10	12	13	26	17	31	8	14	16	23	28	25	13	25	13	6	16
monthly	33	17	24	44	28	26	52	41	31	29	49	38	23	23	27	28	21	31	22	24	45	31	28	38	24	25	26
weekly+	25	71	15	36	39	16	26	23	14	20	38	41	55	28	30	15	67	45	45	43	22	21	54	25	57	66	36

Table 10 - Teachers Reading Aloud to Children

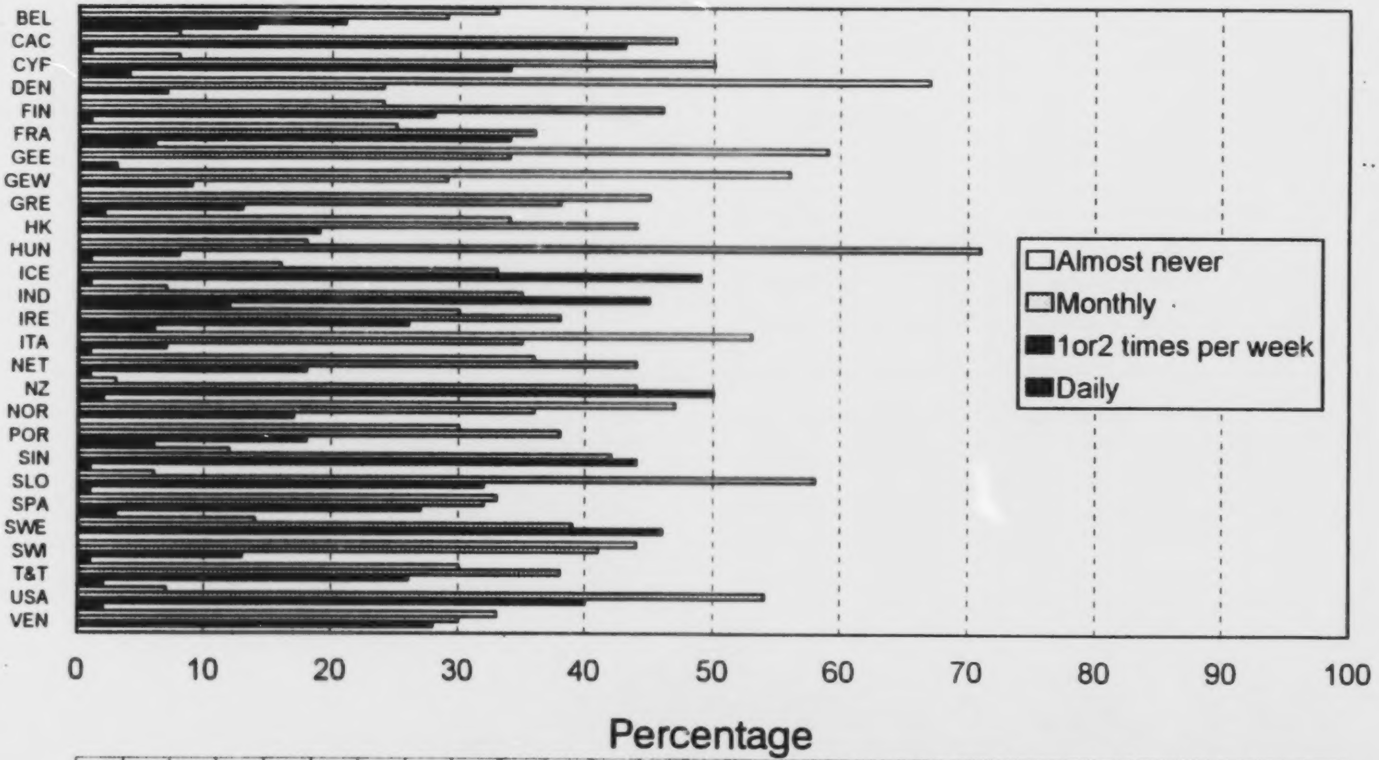
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Almost never	6	0	6	0	4	13	9	8	11	6	0	2	1	2	0	1	1	0	3	1	1	3	1	2	1	1	1
Monthly	28	1	11	7	17	45	20	32	25	21	20	5	23	13	14	16	1	1	12	7	15	11	1	12	4	7	3
1or2 times per week	43	10	50	55	50	32	42	45	35	40	58	15	52	36	37	54	16	22	26	45	49	35	29	69	37	20	19
Daily	20	88	31	35	28	10	28	14	28	27	21	77	23	45	49	27	82	76	53	47	32	48	68	17	52	72	73

Table 11 - Learning Library Skills (from Teacher)

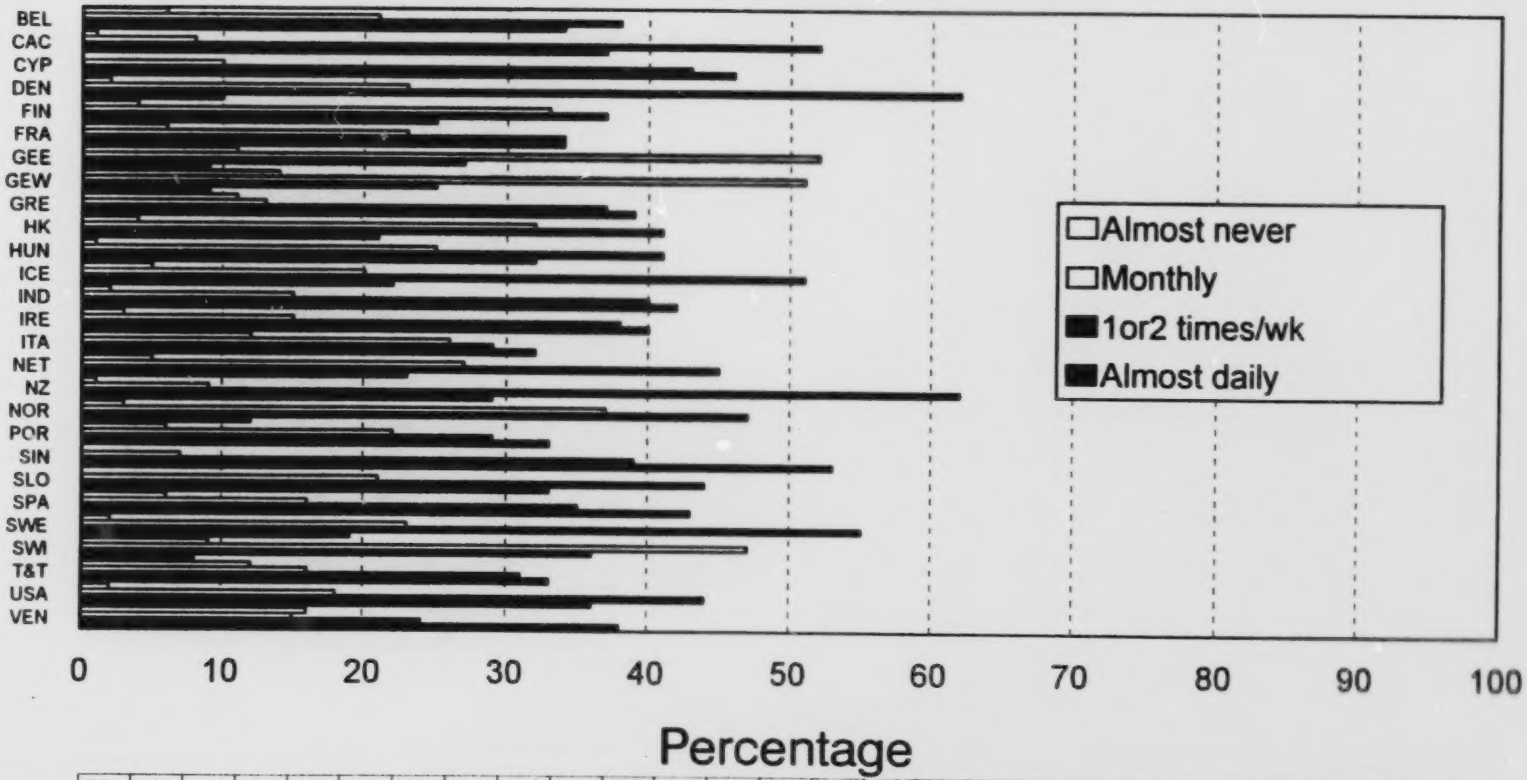
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Almost never	33	8	8	67	24	25	59	56	45	34	18	16	7	30	53	36	3	47	30	12	6	33	14	44	30	7	33
Monthly	29	47	50	24	46	36	34	29	38	44	71	33	35	38	35	44	44	36	38	42	58	32	39	41	38	54	30
1or2 times per week	21	43	34	7	28	34	0	9	13	19	8	49	45	26	7	18	50	17	18	44	32	27	46	13	26	40	28
Daily	14	1	4	0	1	6	3	0	2	0	1	1	12	6	1	1	2	0	6	1	1	3	0	1	2	2	0

Table 12 - Encourage Students to Use Library

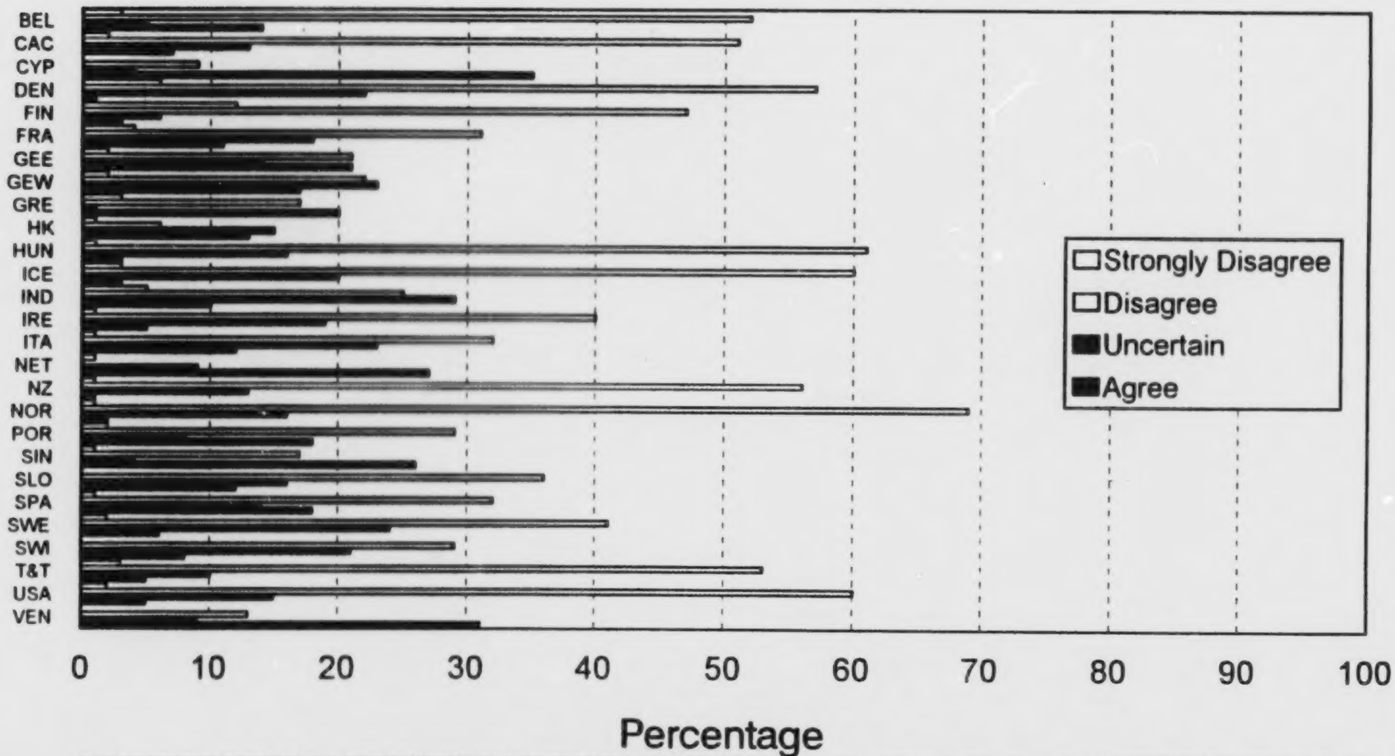
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Almost never	6	1	0	2	4	6	11	14	11	4	1	5	2	3	12	5	1	3	6	0	0	6	2	9	12	2	16
Monthly	21	8	10	23	33	23	52	51	13	32	25	20	15	15	26	27	9	37	22	7	21	16	23	47	16	18	15
1or2 times/wk	38	52	43	62	37	34	27	25	37	41	41	51	40	38	29	45	62	47	29	39	44	35	55	36	31	44	24
Almost daily	34	37	46	10	25	34	9	9	39	21	32	22	42	40	32	23	29	12	33	53	33	43	19	8	33	36	38

Table 13 - Aim:Teaching Children to Choose Own Book

IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Strongly Disagree	3	2	0	6	12	4	2	2	3	1	1	3	5	1	1	1	1	1	2	1	0	1	2	0	3	2	0
Disagree	52	51	9	57	47	31	21	22	17	6	61	60	25	40	32	0	56	69	29	17	36	32	41	29	53	60	13
Uncertain	5	13	4	22	6	18	14	23	1	15	16	20	29	19	23	9	13	16	8	4	16	14	24	21	10	15	9
Agree	14	7	35	1	3	11	21	17	20	13	3	3	10	5	12	27	1	2	18	26	12	18	6	8	5	5	31

I selected a number of variables to expand, most which were dealt with generally in the previous sections of this paper, and to show their relationship to achievement. These are: teaching in the three domains, assessing students' reading interests, the number of books, magazines & newspapers in the school and classroom library, frequency of borrowing books, visiting the library, and the amount of time spent teaching narrative, expository and document type text.

We look first at the effect of teachers teaching narrative, expository, and document type text and how each is related to the others. In short, does teaching narrative improve reading narrative, and so on. The answer is not particularly clear since teaching narrative and expository text infrequently (i.e., three or four times per year) seems related to achievement as is more frequent teaching (i.e., weekly or daily). Further, almost never teaching documents appears to result in the highest achievement!

As indicated in the international data, the majority of teachers appear to assess students' reading interests on a term or monthly basis, and the graph indicates that in BC there are classrooms in which teachers assess students more frequently and in general continue to get slightly better achievement.

The number of books, magazines, and newspapers in the school library as estimated by teachers does not indicate a predictable relationship with reading achievement in the three domains. The reason for this is not clear, but teachers' estimates of these variables are somewhat at odds with the principals' estimates, and somewhat at odds with what one would reasonably expect. Students' estimates of books in their homes, on the other hand, are very good predictor of achievement as may be seen in Table 15.

While borrowing books from school libraries shows a strong relationship with reading achievement in all the domains; curiously, borrowing books from classroom libraries does not. Further, the frequency of visiting the school library is also relate to achievement although not quite as directly, especially when expository text is considered.

In this last section we have explored the relationship of selected variables to the actual reading literacy achievement in one of the jurisdictions—Canada (BC)—for which such information was available. While some variables presented puzzling pictures, two in particular showed very clear relationships. Students who have the opportunity to borrow books from libraries have a considerable achievement advantage over those who cannot, and the number of books in students' homes as predicted by them shows that those who have few books (i.e., none to 10)lag considerably behind in achievement when compared to those who have many (i.e., 100 or more).

CONCLUDING COMMENTS

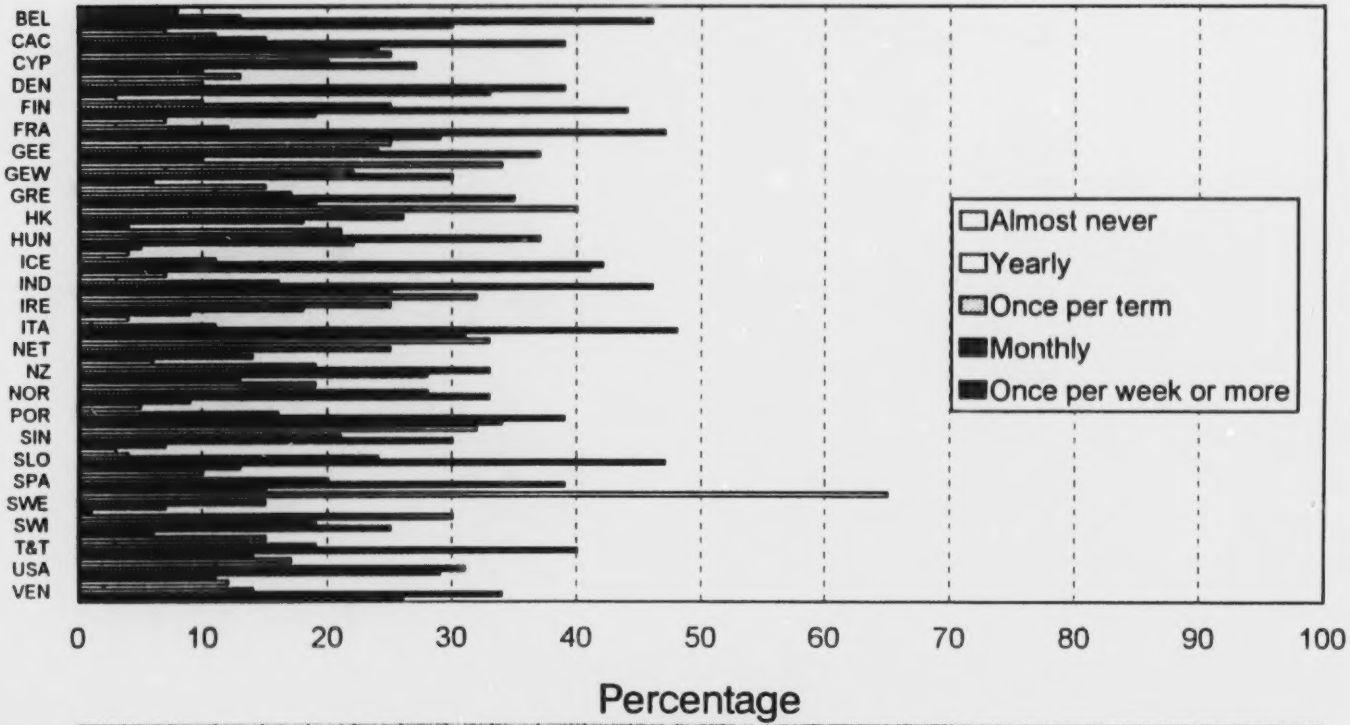
The data from the IEA Reading Literacy Study completed in the early '90s provides some interesting insights into school library resources and their use. Further, we get a perspective of teachers' aims, objectives, and teaching practices as they relate to literacy and libraries.

When looking at literacy and library resources, clearly there are great needs in many countries and very limited resources, yet in some countries very reasonable literacy achievement results are obtained even without large expenditures. The data does suggest that countries with higher per student expenditures do have more school and classroom libraries, that students in classrooms that have access to school libraries achieve higher than those who don't, and that students who have many books in their homes achieve at higher levels than those who don't.

The relationships of resource and practices to achievement were explored to determine what could be learned. Evidence from this study indicates that the relationships are not simple or as direct as one might hope. All of this has reminded me of a story by Garrison Keillor. Faced with a summer in separation, the narrator and his girlfriend agree to read ten books in common, five picked by him and five by her "so that, although apart, we would have the same things on our minds at the same time and would think of each other." (Keillor, 1985, 15) Not surprisingly the agreement failed. The titles selected by Keillor's characters to impress each other remained unread and engendered feelings of guilt rather than the intended unity. The

Table 14 - Assess Student's Reading Interest

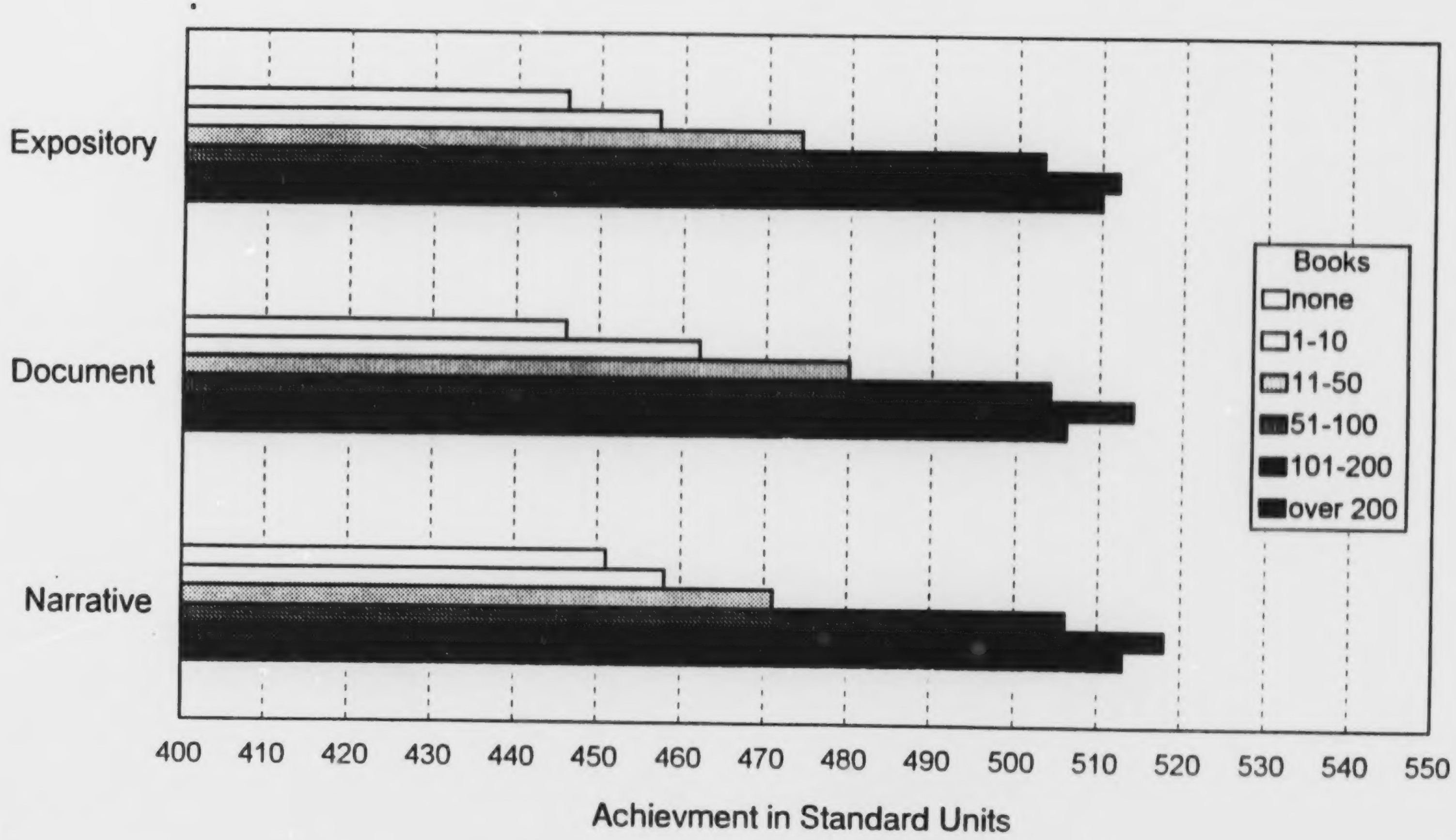
IEA Reading Literacy Study, 9-year-olds



	BEL	CAC	CYP	DEN	FIN	FRA	GEE	GEW	GRE	HK	HUN	ICE	IND	IRE	ITA	NET	NZ	NOR	POR	SIN	SLO	SPA	SWE	SWI	T&T	USA	VEN
Almost never	8	7	25	13	3	7	25	34	15	40	21	4	7	32	4	33	6	19	5	32	3	10	65	30	15	17	12
Yearly	3	11	14	3	10	3	5	7	11	9	15	2	3	15	1	11	19	8	1	9	4	9	8	17	3	11	2
Once per term	13	15	20	10	25	12	24	22	17	26	37	11	16	25	11	25	33	28	16	21	24	20	15	19	19	31	14
Monthly	46	39	27	39	44	47	37	30	35	18	22	42	46	18	48	13	28	33	39	30	47	39	7	25	40	29	34
Once per week or more	30	24	10	33	19	29	10	6	19	4	5	41	25	9	31	14	13	9	34	7	13	15	1	6	14	11	26

Table 15 - Students' Estimates of Number of Books in Home & Achievement in Three Domains

Pop. A (Grade 3), Canada(BC)



problem for us remains to design research questions that minimize confusion of purpose and allow us to collectively think some of the same things at the same time.

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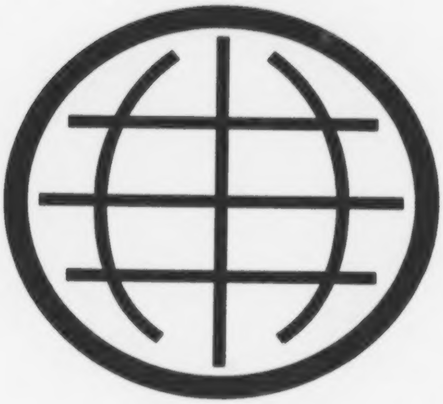
Theme 6

MASS MEDIA: SPANNING THE GLOBE

PANEL



THE SCHOOL LIBRARIAN AS INTERNET MEDIATOR:A CASE STUDY AND EVALUATION

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ABSTRACT

Case studies can be viewed as either having intrinsic interest or as exploratory studies which can be used by subsequent researchers to inform theory. Case studies are not generalizable to populations, as surveys might be, but are generalizable to theory and may have an impact on the development of theory in areas of research. This particular case study relates to the role of the school librarian as Internet mediator and its findings highlight the value of WWW resources in curricular terms and emphasis the key role taken by the school librarian in identifying and exploiting such resources in co-operation with teachers.

INTRODUCTION

This paper will examine the case study as a research method which can be used by those involved in research relating to school libraries. It will seek to highlight the key issues in selecting the case study as a research method as well as the advantages and limitations of the case study. The second part of the paper will provide an example of a case study carried out in a secondary school in Scotland. This case study sought to explore the role of the school librarian as Internet mediator in the context of a school which has a sophisticated information technology (IT) network, an experienced and technologically up-to-date school librarian and teachers who have an interest in exploiting the Internet, and the World Wide Web (WWW) in particular, for curricular purposes. The case study examines the views of both teachers and librarian in relation to the future use of CD-ROMs which are produced in the school and which contain downloaded WWW sites of curricular interest. The case study does not extend to the use of the CD-ROMs by pupils in the school but seeks to examine the issues which arise when teaching and information professionals work together to seek to create and exploit new curriculum related information sources.

THE CASE STUDY AS A RESEARCH METHOD

The Intrinsic Case Study

It is generally agreed that case studies are unique and can never be exactly replicated. Thus a study of the impact of the Internet in one school can be followed by a similar study in another school and while the findings of the two case studies may be almost the same in some aspects, the context of the two studies will always be different. The key issue here is that because a case study can never be replicated does not diminish its worth as a contribution to research or its report as a contribution to the literature. Stake (1995) argues that "We study a case when it itself is of very special interest...Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances." Thus the uniqueness of a particular case study can itself be a reason for adopting this particular method even where there may be no prospect of studying similar cases in the future or where there may be no opportunity to establish common links with previous case studies. Stake (1995) supports this view by classifying this approach as "an intrinsic case study" and states that researchers "are interested in it[the case] , not because by studying it we learn about other case studies or about some general problem, but because we need to learn about that particular case. We have an intrinsic interest in the case." There is an obvious drawback in this kind of case study for researchers in that the use which can be made of this type of case study by other researchers may be limited because of the particular uniqueness of that case. In the context of research in school librarianship, it is possible that studying the role of the librarian in a particular school might be done purely for intrinsic interest but this author would argue that the choice of a case study as a research methodology should contain an element of desire on the part of the researcher to place the case study in the context of other research whether that be in the form of case study or survey or other method.

Generalization

Case studies are unique but they need not be seen as only having intrinsic interest for researchers. Yin (1989) states that a common criticism of the case study method is that it is not possible to generalize from a single case. However, Yin argues that "case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study, like the experiment, does not represent a 'sample' and the investigator's goal is to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization)." Fidel (1992) supports this view, stating that "The case study attempts, on the one hand, to arrive at a comprehensive understanding of the events under study but at the same time develop more general theoretical statements about regularities in the observed phenomenon." Stake classifies this approach as "an instrumental case study" and argues that a case study can be used as a way of shedding light on a particular research problem or question. In relation to generalization, Stake states that "We do not choose case study designs to optimize the production of generalizations...but valid modification of a generalization can occur in case study." In the context of school library research, it can thus be argued that a case study should not be used to generalize to populations, e.g., if a case study showed that a particular approach to searching CD-ROMs in one school resulted in a marked improvement in the standard of history assignments amongst 14-year-olds, researchers cannot argue that this approach will necessary produce the same results in all other schools in that particular district or city. On the other hand, the particular approach taken in that school can be cited when discussing the range of approaches which might be taken in searching CD-ROMs in a theoretical manner. Thus the case study may cause researchers to re-examine the existing theory relating to CD-ROM searching as a result of the case study.

Case Studies and Other Research Methods

Case studies should not be seen as an inferior method when compared with other research methods. Yin (1989) argues strongly that the case study method has often been judged more by prejudice than analysis and states that "Perhaps the greatest concern has been over the lack of rigor of case study research." Yin defends the case study method by stating that this lack of rigor is more often a reflection of the investigator than the method itself. Yin also states that case studies are often criticized for taking too long to complete or producing a vast amount of data which is difficult to analyze effectively but argues that case studies can be done over a short period of time and the outcome can be a precise and easily understood report. Case studies, Yin continues, should not be confused with other methods such as ethnography or observation. Fidel (1992) argues that case studies are often criticized on the basis of reliability, which is described as "the extent to which repeated employment of the same research instrument, under conditions taken to be constant, produces the same result." Fidel states that while case studies cannot meet this particular definition of reliability, they are not invalid because they meet other research criteria such as having value as exploratory studies or in relation to links with theory.

Identifying Research Questions

Yin (1989) argues that the researcher's choice of strategy depends upon a number of factors, including the type of research question which is posed, the extent to which the investigator has control over actual events and the degree of focus in the study on contemporary events. Yin states that the case study method is geared mainly towards the "how" and "why" type of questions as opposed to the "where", "how many" and "how much" questions which are the concern of methods such as surveys. In exploratory case studies, Yin states that "what" questions are also relevant. Stake (1995) argues that "the most difficult task of the researcher is to design good questions, research questions that will direct the looking and the thinking...."

Interviewing

Case studies, therefore, may be seen to be most useful when the researcher has no control over the events (unlike an experiment), the researcher is studying contemporary events (unlike a history), and there is no attempt to generalize to populations (unlike a survey). In designing the case study, the researcher has a number of options in relation to the actual methodologies applied within the case study. Both Yin (1989) and Stake (1995) argue that case studies are normally viewed as employing qualitative methods to address the research questions posed. This does not mean that quantitative data cannot be used in case studies but that, certainly within the educational field, qualitative methods are the norm. The methods cited by the authors above include observation and interviewing. Fidel (1992) used observation as a method because it was the most appropriate way of answering the research questions posed in relation to studying online searching. Stake argues that "Qualitative researchers take pride in discovering and portraying the multiple realities of the case. The interview is the main road to multiple realities" and this author chose the interview as the best method of gathering data in the case study outlined below.

Making Use of Case Studies

As a research method, the case study can be seen to have limitations such as those outlined above but there are clear advantages to using the case study both for the researchers themselves and for those who will read the research reports. For those who make use of case studies—as part of a literature review for further research or on a more practical level as examples of particular experiences from which some lessons may be learned or new approaches may be gained—the findings of the research will be more or less pertinent according to a number of factors. These factors include the similarity of context, e.g., size of school, number of staff in the library; similarity of experience, e.g., extent of use of the Internet within the curriculum; the focus of the case study, e.g., a particular focus on one area of the curriculum such as geography; and the relationships between the key protagonists in the case study, e.g., the school librarian's involvement in curriculum planning.

Summary

The above discussion seeks to justify the choice of the case study as a relevant methodology in studying aspects of education. It is recognized that the case study method has limitations related in particular to generalization but it is argued that the case study method has attributes which are not available in other research methods.

THE SCHOOL LIBRARIAN AS INTERNET MEDIATOR: A CASE STUDY

Context

The focus of this case study is Linlithgow Academy, a 900 pupil comprehensive school in West Lothian, Scotland. The school's home page on its Website (Linlithgow Academy, 1997) states that the aims of the school are:

- To provide all pupils and staff with the opportunity to achieve their maximum potential;
- To provide a supportive environment in which self-confidence and mutual respect can develop;
- To make learning and working a challenging and enjoyable experience.

The school has one professional librarian who receives voluntary assistance from some parents to help with the administration of the library. The school has been very active in developing an information strategy which includes making links with local companies and universities in order to enhance the IT provision within the school. In terms of Internet provision, the school received a server from Sun Microsystems and a broadband connection from a local cable company, Telewest. The school's home page has been developed by pupils in their final year at school and is coordinated by the IT group in the school. The school librarian is a leading member of this group. The school also received a CD authoring system from Hewlett Packard and decided that the combination of these IT resources could be integrated to produce new, value added curriculum resources for the school by downloading websites (with copyright clearance) and making the selected websites available to pupils in the form of a CD-ROM, initially in the library and in future, via the school network.

In terms of Internet provision, Linlithgow Academy is more advanced than most schools in the U.K., although an increasing number of schools now have home pages or are about to have broadband connections and, to this author's knowledge, it is unique in having a CD authoring system in the school. In other ways, the school is typical in that it follows the same curriculum as other Scottish comprehensive schools and is at an early stage in exploiting the Internet as a curricular resource, as are many other schools in the UK and elsewhere. Thus in terms of a case study, the school has some unique aspects but in curricular terms, it is not atypical.

The Focus of the Case Study

The focus of this case study is the mediation of the Internet in a secondary school and the implications of this mediation for the creation of curricular resources and for the role of the school librarian. It can be argued that mediation of information resources in schools by school librarians and teachers is not new. For example, many school librarians still retain a current newspaper cuttings file despite the fact that they have one or more newspapers on CD-ROM in the library. To produce a newspaper cutting, the school librarian can be seen to have mediated the original information resource, i.e., the newspaper and produced a new, value added resource, i.e., the newspaper cutting which is directly related to a section of the curriculum. Thus while mediation of information resources is not new, mediation of the Internet can be seen as an innovation in the school.

The case study was chosen by the author because of his existing links with the school and the school librarian. As Stake (1995) states "It is not unusual for the choice to be no "choice" at all. Sometimes we are given a case, even obligated to take it as the object to study." It is important to the author that the focus of the case study should not be on the technological aspects of Internet mediation. For example, there is no intention to concentrate on which software package should be used to download websites or on the mechanics of producing CD-ROMs. The author's key interest lies in what follows the acceptance of the idea that the Internet should be mediated in this school, what the issues are in creating this mediated resource and how these issues are viewed by the school librarian and selected teachers in relation to the potential curricular use of this new resource and the current and future role of the school librarian as Internet mediator in the school. This case study ends with the creation of a prototype CD-ROM and does not cover the use of the CD-ROM by pupils in the school. The prototype CD-ROM contains websites related to year 2 (age 13) pupils studying geography and in particular, geographic aspects of rain forests.

The research questions

Yin (1989) argues that "The heart of the protocol is a set of substantive questions reflecting the actual inquiry" and that there are two characteristics of such questions in case studies, as opposed to other methods such as surveys. The first characteristic is that the questions are posed to the researcher and not to a respondent and the second characteristic is that each question should be accompanied by a list of possible sources of evidence. The second characteristic does not pose a problem in this case study as the sources of evidence are the geography curriculum in year 2, the school librarian and the three geography teachers involved in teaching this area. The research questions posed are the key to any case study as they will influence what is studied, how it is studied, what evidence is gathered and how that evidence is presented. It is interesting to note here that this stage of case study research is the same as the task which teachers and school librarians teach pupils to accomplish when identifying the purpose of an assignment or project (Herring, 1996).

The overall research question can be posed as:

- How will the mediation of the Internet in this form affect the role of the school librarian?

From this overall question, a number of other questions can be identified:

- What is the rationale for mediating the Internet?
- What criteria will be used to select relevant websites?

- How valuable will this new information resource be in relation to existing information resources in the school?
- How do teachers and the school librarian view the future in relation to Internet mediation in the school?

Interviewing

The main method employed in addressing the research questions was the open-ended interview. Consideration was given to other forms of interview such as the semi-structured type but as the aim was to find out what Yin (1989) terms "the facts of the matter as well as the respondents opinions about events," it was decided that semi-structured interviews would be too restrictive in this particular case. The interviews were carried out at specific times but there were also discussions with the teachers and the school librarian about particular issues and these discussions contribute to the findings although the use of such discussions may be criticized as being too subjective in that it is the researcher's version of the respondents views, in a situation where there was no immediate record of the discussions, which is being used.

Research findings

The findings of the research are briefly outlined below and are presented firstly in relation to the specific questions which were posed and then in relation to the overall research question.

What is the rationale for mediating the Internet? There was general agreement amongst the respondents that the most important rationale for mediation was the nature of the Internet itself. Respondents used terms such as "too vast" , "too much information" , "not enough structure" to describe the Internet. There was also a view that pupils in the early years of secondary school would find non-mediated access to the Internet too difficult to cope with because of the sheer amount of information. One teacher posed the question "What do you think pupils would do if they searched by keyword and found hundreds of hits? I heard of a pupil looking for information on Toronto and finding a quarter of a million hits!" The other main concern was more practical and related to the accessibility of sites and one teacher gave an example of spending much time on preparing worksheets to support a part of the curriculum, identifying a number of relevant sites, taking pupils to the networked workshop and finding that most of the sites could not be accessed on that particular afternoon. It was agreed that if the sites were available on CD-ROM and used in the workshop, the problem of access would not arise. Other concerns stated by respondents related to the amount of time which pupils might need to spend to find relevant information from websites and the fact that pupils would inevitably be tempted to continually widen their searches by following up links from particular sites and thus spend even more time at the computer. The school librarian commented that there was also a fear that pupils would spend so much time searching websites that they would either forget about other information resources or not have enough time to examine alternative sources of information. There was thus overall agreement that the Internet should be mediated and that mediation would ensure that the use of information and ideas gained from websites would be much more closely related to the curriculum if this mediation took place.

What criteria will be used to select relevant websites? The main criteria cited by all respondents was relevance to the curriculum and, from the teachers' point of view, specific relevance to individual parts of the curriculum. It was clear that the teachers saw the potential use of the websites as learning resources to which pupils would be directed via the use of worksheets which would cite the URL of the site or part of the site to be searched. The school librarian, not unexpectedly, took a rather broader view of relevance to the curriculum and argued that while a site might be chosen for a particular part of the curriculum, e.g., a rain forest site for year 2 geography, this did not imply that the site could only be used by the geography teacher or by year 2 geography pupils. The school librarian argued that, as with other information resources in the school, there is potentially multiple use across the curriculum and a rain forest site could be used by a modern studies class examining topical issues in international politics.

The language level of the sites was also cited as being important and it was noted by the teachers in particular that, with classes of mixed ability pupils, technical sophistication of the language had to match the pupils' reading ability. In relation to language level, the teachers implied that the pupils' understanding of the language included their understanding of concepts and ideas expressed by that language. Thus it was seen as very important that when particular sites were used, e.g., rain forest sites, the information resource should match the pupils' existing knowledge as far as possible. There was a danger, one teacher argued, that if pupils found technical terms or concepts with which they were not familiar in the website, this could cause confusion amongst pupils. The school librarian argued that whilst the level of language was clearly important, the use of selected websites might also include presenting pupils with information or ideas with which they were not familiar. The pupils would then use alternative sources to research this information.

The format of the websites was also seen as important, particularly in relation to the use of graphics and text. It was generally argued that pupils approached electronic sources of information differently and that experiences with the pupils' use of commercial CD-ROMs in geography suggested that pupils had higher expectations of presentation in electronic sources than in books. One teacher stated that pupils would accept a black and white picture in a book but not on a website even where colour was not a key factor from the teacher's point of view. Linked to this was that pupils in year 2 could not always cope with large amounts of text in a website, whereas pupils at levels 5 and 6 could cope. Thus there needed to be a balance between text and graphics which suited the pupils' reading ability but there was also a factor in terms of attracting pupils' attention to the content of the website, i.e., pupils would be more likely to read the text carefully if it was accompanied by attractive graphics. One teacher argued strongly that pupils were more highly motivated to use sites which had attractive graphics.

How valuable will this new information resource be in relation to existing information resources in the school? While both the teachers and the school librarian saw the website based CD-ROMs as innovative information resources for the school, there were a number of reservations expressed about the value of the resources. All the respondents agreed that the CD-ROMs should not be seen as potential replacements for existing resources in the classroom and in the school library but as additional and complementary resources. That is, the Internet based resources would be valuable inasmuch as they satisfied a curricular need within geography for the teachers and, where possible, across the curriculum for the school librarian. In many cases, the most suitable resources for pupils to use would remain library-based resources including books, journal articles and commercial CD-ROMs. In the longer term, as the scope of web-based resources on the CD-ROMs grew, the teachers expressed a view that there might be a greater use of such resources in the geography curriculum but none saw the demise of print-based resources.

The school librarian's view was that the CD-ROMs should definitely be seen as additional resources which should be evaluated in the same manner as all other resources in relation to their value as information resources. The key difference with the CD-ROMs, the school librarian noted, was that they were created within the school and with a particular area of the curriculum in mind. Also, because of the teachers' input to the selection and creation of the CD-ROMs, the school librarian felt that the teachers might feel that, as they had a vested interest in the use of such resources, the CD-ROMs might be seen as more valuable than other resources.

The major reservation expressed about the value of the new resources by both the teachers and the school librarian was the time needed to create the resources. All agreed that, in order to create curricular resources of real value, there was a requirement for a substantial investment in time in not only selecting the websites for the CD-ROMs but particularly in designing learning experiences for the pupils which involved the use of both CD-ROMs and other resources. There was no doubting the desire of both teachers and the school librarian to be involved in the creation of innovative resources but, as one teacher stressed, given all the pressures on teachers in relation to curriculum development, inservice training and administration, it was difficult to see where the time to create such resources was to come from. The school librarian noted that time had always been a feature in relation to creating resources in schools, whether based on print, audio-visual, video or computer-based technologies but felt that the CD-ROMs, in their basic form as a collection of websites, should be much easier to create than other resources such as video.

How do teachers and the school librarian view the future in relation to Internet mediation in the school? The key respondents to this question were the school librarian and the principal geography teacher as their knowledge of IT developments was much deeper than the other teachers. Both agreed that Internet mediation would continue for the foreseeable future and particularly for the lower years of the school. The geography teacher saw the possibility of the CD-ROMs becoming more sophisticated learning packages in the future. Rather than merely containing websites which could be searched, the teacher hoped to see CD-ROMs which could be used independently by the pupils. These CD-ROMs would contain the websites, searchable by keywords as well as URLs as well, as guidance from the teacher in relation to the task to be completed. The CD-ROMs would contain what the teacher called "electronic worksheets" which could be interactive, e.g., they might contain help buttons which could help pupils to understand technical terms or concepts. The teacher admitted that this was perhaps an ideal and, as above, the question of time being available to create such was resources was a key issue.

The school librarian is heavily involved with the development of the school's home page and envisaged the future as being in the form of the more sophisticated CD-ROMs cited by the geography teacher. In addition to CD-ROMs or even as a replacement for them, the school librarian saw the use of a school intranet as perhaps being the main vehicle for disseminating Internet mediated resources. The Intranet would be accessible from all parts of the school and could contain websites related to all parts of the curriculum as well as the kinds of learning packages which the geography teacher envisaged as being on CD-ROM. The school librarian noted that the computing department was currently investigating the creation of home pages which would contain material related to teaching a new course within that department. The school librarian's main concern here was that if teachers encouraged pupils to access curricular resources on the intranet from the classroom as well as using networked commercial CD-ROMs in the classroom, pupils would possibly ignore the other information resources available in the library. The geography teacher agreed that intranet developments would impact on the use of resources but saw the integration of at least one computer workshop within the library and it would be from such workshops that pupils would mostly use the intranet and this would be allied to the use of print and other resources.

In analyzing the responses to the above questions, it is possible to return to the overall research question:

How will the mediation of the Internet in this form affect the role of the school librarian? The school librarian's view was that the creation of CD-ROMs with websites which could be used directly within the curriculum did affect the role of the librarian as it added to the range of resources and services offered by the library to teachers and pupils. In one sense, it added another role—of Internet mediator—to the many existing roles but in another sense, this role was merely an extension of the school librarian's existing role as information resource provider and manager within the school. The school librarian's task was to identify appropriate curricular materials in all forms and make teachers aware of these resources as teaching and learning tools in the library or in the classroom. Thus when new information resources are available, such the appearance of commercial CD-ROMs in the past few years, the school librarian's task is to adapt to the existence of these new resources and seek ways of exploiting them. The school librarian remarked that in some schools, exploitation of the Internet has been seen as a way of enhancing the status of the school librarian especially in terms of being seen as an IT expert in the school. In this school, however, the status of the school librarian as IT expert and information resource manager was not in doubt. The most dramatic effect of Internet mediation, in the school librarian's view, was the pressure on time available, given the multitude of other tasks requiring attention in the school library, on the school's IT development committee and in relation to the school's home page development.

In the teachers' view, the role of the school librarian as Internet mediator had, in some cases, made teachers more aware of the curricular role of the school librarian. The main reason for this, one teacher noted, was that the school librarian's initiatives in providing websites directly related to curricular needs had allowed the teacher to rethink parts of the curriculum and how information resources could be used by pupils. The teachers were also concerned about pressures on time for themselves and for the school librarian and the principal geography teacher noted that, while the present project dealing with one small section of the curriculum was innovative and therefore well supported, it was difficult to see how one school librarian would cope if demand for school-based CD-ROMs increased dramatically across other areas of the curriculum. Another teacher stated that this project had attracted attention across the school and it was likely that some teachers in other areas of the school would be seeking help from the librarian when previously they had little contact with the library.

CONCLUSION

This paper has examined the case study as a research method and justified the use of the case study in research in school library and information services. The case study has limitations as a method but does provide an in depth study of particular cases which, while not being generalizable to populations, can be generalizable to aspects of theory. The case study undertaken by the author demonstrates in particular the importance of posing research questions and using open-ended interviews to gather data. The potential use of this case study by other researchers and practitioners will depend on thei particular needs but it is hoped that the author's approach might provide some useful guidelines for subsequent case studies of schools exploiting the Internet as an information resource.

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PLANNING FOR ACTION: TURNING MEANINGFUL DATA INTO PROGRAMS AND PROMOTION

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ABSTRACT

This workshop presents guidelines and tools for action research in the school library which will help the librarian justify expenditures and personnel and evaluate and plan services. It shows how statistics can be turned into meaningful knowledge about what is currently being done in your library, how well it is being done, whether it should be done, and what needs to be known to prepare for the future. Included are types of measurements, measurement techniques, meaningful data analysis, and pungent reporting of data to a variety of audiences.

All institutions, including libraries, need to assess their value and performance in order to justify funding. In an era of increased expenses and reduced funding, programs which are not highly rated can be deprived of even maintenance levels of funding, phased out, or placed on the ballot for referendum by taxpayers. Information technology has dramatically increased the budgets of school libraries, and school librarians need to demonstrate the real benefits of these technologies for students. It is also necessary to assess the total school library program, and action research is a tool which can help to examine, report on, and improve library operations. Assessing operations and ascertaining the worth of the library program are good mechanisms to justify steady funding.

The goal of action research is to improve management or solve problems at a single site by collecting data which reveals current practices in the researcher's own library (Isaac & Michael, 1995). While it must be carefully done, action research is not theoretical, applied, or experimental research (McMillan, 1992). Action research involves gathering and analyzing data in our own library, and it may help us determine the degree to which we are meeting our missions and delivering services. Action research can therefore help confirm successes, acknowledge weaknesses, modify or remove unproductive activities, and plan for the future.

Action research utilizes measurement techniques, but there are limits to measurement. Not all projects or services lend themselves to easy measurement. Even when projects and services can be easily quantified, it may sometimes be difficult to ascertain what the quantities actually reveal. Two important considerations related to measurement and the interpretation of results are validity and reliability. Validity is the degree to which an instrument measures what it is intended to measure. It can also refer to the extent to which inferences from measurements are appropriate. Reliability is the degree to which measures are free from internal error and remain constant over time (McMillan, 1992).

WHAT NEEDS TO BE MEASURED IN SCHOOL LIBRARIES ?

Four questions illustrate what needs to be measured in school libraries in order to determine current practices, assess progress toward goals, make modifications, and justify new programs, technologies and staff:

What is the library currently doing?
How well is the library doing it?
Should the library be doing it?
What needs to be known about the future?

A variety of quantitative and qualitative measurement techniques can provide answers to these questions.

WHAT CAN BE MEASURED IN SCHOOL LIBRARIES?

School libraries are a natural place for action research since so many aspects of library service and programs can be counted. Public librarians calculate output and services based on library use measures, materials use measures, materials access measures, reference services, and programming (Van House, 1987). School librarians can use similar quantitative and qualitative assessment tools.

What can be measured in the school library includes things easy to count such as time, collection, facilities, people, money, and occurrences in programs and circulation. These simple quantitative measures can be used to indicate what the library is doing.

The following qualitative measures indicate how well services are delivered: accuracy, efficiency, accessibility, responsiveness, learning, and success/failure ratios for reference services and the collection. Other qualitative measures indicate how well the library is interacting with its service community and how it is perceived by that community: influence, impact, relevance, satisfaction, support, and the degree of consensus or discrepancy between the views of the library and its users.

After using action research to determine what is being done and how well, the results can be analyzed to make decisions to continue or modify allocations of staff, programs, and services. In order to plan for the future, school librarians should develop priorities and estimate the time, money, facilities, and services needed to achieve them.

HOW TO MEASURE

Types of Data

The goal of an action research project should determine the type of data to be collected, the methods of collection, and the measurement techniques. There are two basic types of data: quantitative and qualitative. Quantitative data are comprised of facts with objective reality and are expressed numerically. There is a reliance on numbers and counting, experiments, and statistics in quantitative research (McMillan, 1992). Quantitative data in school libraries can be collected with tally sheets, automated library software which calculates circulation and collection statistics, some types of observations, and some types of questions on questionnaires and interviews.

Qualitative data relies on the perceptions of the subjects. There is more emphasis on opinion, verbal descriptions, and naturally occurring situations in qualitative research (McMillan, 1992). Methods to collect qualitative data in school libraries include observations, discussions, interviews, and surveys. Questions call on the subject to use his or her perceptions and evaluations in making a response. Judgment or personal intervention on the part of the researcher may also affect the analysis of the data collected. For example, answers to open-ended questions on a questionnaire or an interview will require the data collector to group answers into categories or responses. The researcher can predetermine these categories based on his or her assumption of expected results or develop the categories while tabulating the answers given to the open-ended questions. In either case the data may be affected by the collector.

Measurement Techniques

The measurement technique selected flows from the type of data collected and the goals of the action research. Measurement techniques may be quantitative, qualitative, or a combination of both.

Counting items is the technique most often used for collecting data. The question of validity is important to consider even for counting. For example, a turnstile can count people entering the library but it will also count employees returning from lunch and people needing a bathroom as well as a book. Circulation statistics cannot indicate whether an item was useful or enjoyed. A tally sheet should be developed using the categories to be measured and the measures should be as concise and as clear as possible. Examples of counted items in a school library are the number of walk-in students, the number of classes taught, the number of books in a collection, and the number of circulations.

The before/after measurement technique counts items in order to assess the impact of an intermediary intervention. Care must be taken that the measure selected will actually measure the effect of the treatment and that there are no other intervening variables which could explain the change. For example, in order to determine the impact of an event on circulation, count circulation before and after an event such as an author visit or the initiation of resource-based learning.

An inflation/deflation index is calculated on a constant unit of measurement such as a selection of books, periodicals, or AV materials. The percent of change in the cost of that unit is calculated by comparing the cost in a given year to the cost of that unit in the prior year or a base year. For example, the percentage increase in the average cost of a selection of books on standing order could be calculated between the current year and the prior year or when the standing order began.

Content analysis is a systematic, objective, and quantitative technique for evaluating the content of media through counting rather than evaluative analysis. Its goal is to eliminate bias and decrease subjectivity (Busha & Harter, 1980). Documents are examined, items to be counted are identified and put into categories, and the number of occurrences are tallied. While most content analysis is performed on large numbers of media, such as types of sensational material in best selling novels or themes in young adult novels, the school librarian can use content analysis to determine if library resources are being used by students by counting the number of reference books cited in a group of class term papers.

Collection mapping involves counting items in various classification areas of the collection and making a visual representation of that data. This data can be used to evaluate the collection by comparing the number of items with the use of these areas of the collection by resource-based learning projects (Loertscher, 1996). A conspectus is a particular type of collection evaluation in which areas of the collection are assigned to each course in the curriculum and counted so that collection support for each course can be ascertained.

Relevance of materials is measured by users who rate each item according to a predetermined scale. This is a qualitative technique because judgment is used in placing an item into a category or degree of relevance.

Success/failure measures can count the number of times a particular event or item is considered a success or a failure. While this is counting, it is a qualitative technique because personal judgment determines whether an event is a success or a failure and also establishes what is an "acceptable" success/failure rate. An example is a study of user expectations in finding a specific title or whether a reference question has been successfully answered.

Best professional judgment is an inherently qualitative technique. Qualified persons are asked to make judgments about a situation by applying a specific rating scale to items they are evaluating. Other uses of best professional judgment are focus groups and consensus/discrepancy techniques. A focus group can brainstorm about problems and generate possible solutions. The group, which ideally consists of seven to twelve members, should have a set of questions or topics for discussion. A consensus/discrepancy analysis asks various disparate groups such as staff and users to rate aspects of library service. This permits the researcher to compare how each group perceives library services and to identify differences of opinion. For example, staff may believe that there are adequate electronic resources while users would like to have more workstations available.

Methods which can utilize both quantitative and qualitative data and techniques include questionnaires, interviews, observations, rubrics, and case studies. Questionnaires and interviews require careful wording and explanations of technical terms. One instrument can include a variety of quantitative and qualitative questions such as demographic data, occurrences, amount of time, success/failure, satisfaction, or relevance. The questions may be structured, with a selection of categories for response, or open-ended. It is advisable to pre-test the instrument on a sample group to identify questions which may be misleading or unclear. The instrument may be distributed to the entire population or to various types of samples. A student survey can provide information about student use of library resources, the level of student information skills, or student satisfaction with library services and programs.

The trained observation technique may also include both quantitative and qualitative data. The process of collecting the data is personal observation rather than instruments such as surveys. The bias of the observer in selecting, recording, and reporting observations is a potential problem which may be reduced through training and structured observations (Busha & Harter, 1980). In the school library, a trained observer may be asked to count and evaluate staff, activities, student behavior, or items for their quality.

Rubrics transform expectations into degrees of success and become grading sheets for assessment. This type of measure has been used when it is very difficult to apply a numeric assessment, but the descriptions of each category must be well-defined and mutually exclusive in order to ensure accurate assessment.

Case studies are a means of examining the unique problems of groups or situations by using a variety of both quantitative and qualitative data-gathering methods such as observation, surveys, counting, and interviews. In this way comprehensive information about a particular topic is assembled. Its purpose is usually to discover and describe what exists or what occurs (Busha & Harter, 1980). Case studies may be conducted on groups of library users such as students or faculty or a particular project such as a unit in resource-based learning. While a case study may identify problems to be addressed, it is less suitable for generalization because it is based on one possibly unique situation.

The selection of one or more of these research techniques should be suited to the goals of the research, the questions to be answered, or the problems to be solved.

ANALYZING THE DATA

The method selected to analyze the data depends upon the type of data collected—quantitative or qualitative. Methods of quantitative data analysis include measures of central tendency, ranking, collection mapping, inflation/deflation indexes, and content analysis. Some qualitative measurement techniques inherently involve analysis: success/failure analysis, relevance, before/after techniques, consensus/discrepancy measures, and case studies.

Quantitative Analysis

Measures of central tendency can be applied to counted items. They include the calculation of the mean, median, and mode. The mean is the easiest and quickest statistic to compute, for it is simply the arithmetic average. It is used to show the center of a sample, for example the average cost of a selection of books.

The median is the mid-point in a ranked list of scores, the point at which half the ranked scores are above and half are below. The median shows the upper and lower halves of the distribution but not distance from the central point. In the school library, the median can indicate the mid-point publication date of a selection of books or an area of the collection.

The mode is the most frequent score or response in a ranked list of scores. It is used to locate the most typical case, the item with the most occurrences. In the school library, the mode can be used to determine which grade level or form circulates the most materials. It can also be used in collection evaluation to determine which area of the collection has the most items.

Some qualitative techniques can be subject to quantitative analysis. The results of interviews and questionnaires, ranking and rating scales, success/failure analysis, and collection mapping can be logged onto a tally sheet. Open-ended responses can be collapsed into meaningful categories and each category counted. Data compiled on tally sheets from various quantitative and qualitative measures can provide answers to the questions of what we are doing and how well we are doing it.

Qualitative Analysis

Measures of central tendency and rank turn quantitative data into qualitative information by determining the relative importance of counted items. Other qualitative techniques such as case studies and consensus/discrepancy measures use various forms of qualitative analysis and judgment. The researcher's personal judgment is used to determine what categories to use, the degree of differences in measuring items, or how an item is viewed in the context of the user's application.

Compilation and analysis of data can be the most time consuming aspect of action research. Applying a variety of questions to the data and determining the answers without bias is easier to accomplish with quantitative than qualitative data.

REPORTING THE DATA

Who Needs the Data?

The first thing to be considered in reporting the results of action research is who needs the data and for what purpose. One goal of action research is to identify and evaluate library operations and progress toward missions, and the major beneficiary of such an analysis will be, the school librarian.

Action research can also be undertaken for a specific purpose or to justify changes in policies or funding. For instance, data can be collected to show the benefits of flexible scheduling, to demonstrate the need for additional clerical or professional staff, to request increased funding for materials to support changes in the curriculum or additional resource-based learning, and to justify the purchase of new technologies.

The results of action research should be reported to those within and beyond the school library who need the information for decision-making. They can also be given to other constituencies within the school setting such as such as department heads, supervisors, principals, school boards, parents, faculty, and volunteers. Seek opportunities to report on the school library to groups beyond the school with an interest in education, information, and books such as community, professional, service, and volunteer groups.

What to Report?

Action research is a means of gathering data to describe practices, facilitate decision-making, or to support proposals. The goal in reporting the data from action research is to select and organize it in such a way that it makes meaningful and memorable points about the school library.

One way to make quantitative and qualitative data more meaningful to administrators and the public is to use per capita data rather than numeric totals. The advantages of *per capita data* are that they take the user's point of view and that they enable more accurate comparisons and trend analysis. Per capita data can show the extent of school library service to each member of the community, and they can show the relative use of each type of service by the average member of the community. For example, you can determine what users are doing in the school library by comparing annual per capita circulation with annual per capita reference questions and annual per capita in-house use of materials.

Per capita data can also demonstrate to funding bodies and administrators the efficiency of investing in the library. It can show what is budgeted or spent per student for school library service and what the student receives in return. For example, compare the annual per capita cost of school library materials with the cost of purchasing at a store, the average per capita circulation over the year. For example, the cost of school library materials per student is calculated to be US $25, the cost of one hardback book, and the average annual circulation per student is six books. The cost of purchasing six currently popular books in the collection may be about US $150, but the cost to the student for taking out those same books at the school library is only US $25. Also included in this US $25 student per capita investment in school library materials is the student's in-house use of school library resources such as reference books, indexes, databases, and CD-ROMs. For the cost of one hard back book per year, the student gets access to the entire collection.

A second method of making quantitative and qualitative data about the school library meaningful is to make *comparisons*. Life-size comparisons are useful for administrators and the public. For instance, place the annual number of visits to the school library in school buses or the auditorium. How many school buses would be needed to bring all users to the school library each year? How many times does school library attendance fill the auditorium each year? The cost of school library materials can be expressed in terms of their comparative value in the consumer market place. This usually demonstrates the efficiency of investment in the library. In the same example, the student with an annual per capita cost of school library materials of US $25 could spend the same amount of money over the whole year to purchase a nonrenewable resource such as five movie tickets or two large pizzas. The US $25 investment in school library materials, however, enables the student to check out two books or two hundred books. In fact the more the student uses the library, the more cost effective it becomes and the more return the student receives on the annual per capita investment in materials.

One way to determine how well your school library is doing is to compare it with state, provincial, or national standards or with similar types of school libraries. Select the data for comparison such as budget, collection, or facilities. Identify relevant standards or peer schools for comparison. Peer schools should be similar in size of student body, location, grade or form level, and type of school. Such comparisons may be important to those who are responsible for the quality of education provided—administrators and boards of directors.

An important comparison to make for funding bodies is the rate of inflation of school library materials versus the cost of living index. The rate of inflation for school library materials such as magazines, books, and information technologies has often been greater than that for the general cost of living.

Reporting *trends* is a third way to make the results of action research meaningful. Per capita and comparative data can be collected over a period of years from quantitative and qualitative measures to indicate what the school library has done over that period of time. The results can be used to determine practices, assess progress, and make projections or changes. Expressing the trend data in per capita form is the most accurate form of comparison over time.

Trend analysis can also help evaluate the collection. Tracking the number or cost of actual purchases of the various types of materials in your school library over a five-year period enables you to see clearly which formats have been emphasized. Trend analysis can help also assess the relevance of the collection. To determine if you are purchasing what your students need, track over a five-year period the number of purchases in a particular classification area of the collection and compare that with the number of circulations in that same classification area.

How to Report

A written or oral report should be accompanied by a one-page summary of important points and by visuals which dramatically illustrate the points and make them easy to remember. Graphics should be limited to one issue per page and they should be more visual than numeric. Use simple line or bar graphs, pie charts, or illustrations. Line graphs can effectively illustrate inflation indexes and trend analysis. Bar graphs can dramatically demonstrate comparisons. Pie charts can graphically represent areas of the collection. Spread sheet programs can transfer the collected numeric data into graphics.

Written reports, summaries, and graphics can be combined into a publication which describes your school library. Most sports teams have marvelous "media books" that contain the vital statistics on coaches, players, the win and loss records for the team for the life of the team. Pictures, charts, and graphs decorate the pages so that the records are both attractive and informative. Before the advent of desktop publishing, such a venture would be costly in time and publishing. However, with modern technology, school librarians can create such a publication to help administrators, funding bodies, users, and the local community understand what the school library is all about. It seems imperative that school librarians publish a pamphlet or brochure to tell the story of their school library.

CONCLUSION

Time is a precious commodity for school librarians, but the time invested in an action research project may yield significant dividends in improved services and funded projects. Among all the possible action research projects, the school librarian should select those which provide the data to describe the library, solve a problem, or fulfill an important current need such as flexible scheduling, increased clerical or professional staff, or increased budget to support resource-based learning or additional technology. Design the action research project to provide answers to one or more of the original questions: what is currently being done in the library, how well is it being done, should it be done, and what is needed for the future. Present the problem and the research results to persons or bodies who need the data to make informed decisions, and make the school library known for the excellence of its collection, services, and management.

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TEACHER-LIBRARIAN? WHAT'S IN A NAME? MAKING MEANING FROM METAPHOR

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ABSTRACT

Under what title should teacher-librarians be known? What is in a name? This paper provides an Australian background to the questions about the name that should be given to those who work as information specialists in schools. The authors review metaphorical analysis as a research tool and outline a qualitative research project employing the metaphor technique in an attempt to discover the conceptions that stakeholders (teacher-librarians, principals, classroom teachers, others) hold about three alternative titles that could be employed by the teacher-librarian profession. This research was undertaken with a number of groups in New South Wales, Australia.

The role of teacher-librarian has been a topic of conversation among teacher-librarians for as long as teacher-librarians have existed in name, and even earlier when teachers performed the role as an extra. In Australia there has been anongoing struggle to define just what teacher-librarians should be and what they should do. In this country this struggle goes back to the 1960's when Australian governments and educational bureaucrats first 'discovered' the need for school libraries (clearly there were lighthouse practitioners in the field but it took the 'system' some time to catch up). The struggle has, however, not been limited to Australia. The same or similar debate has a history in New Zealand, England, Canada, the USA and other countries.

In recent time the debate in Australia has become more complex. One might suggest a number of possible reasons for this. The advent of the invasion of schools by the new technologies has, some would suggest, radically altered the work that teacher-librarians actually do. The economic rationalist policies of successive governments at the federal and state levels has tended to move educational funding away from anything that is not bolted down or seen as core. In this climate, funding for libraries and the staff that underpin them has been identified as 'non-core'. (On the other hand, funding to maintain class size, to meet the needs of special education, and to test outcomes has remained core.)

The advent of the electronic world and the economic rationalist vision collide to form a twin danger for teacher-librarians who may well be regarded as wedded to a print-based world that is seen to be fading fast. In this world funding (read large buckets of funding) will be found for bells and whistles that are smaller, faster, easier, more complete, and less expensive than ever before. As systems push more and more funding into information technology infrastructure and with the ongoing demands of being part of the global village, less funding will be available for traditional information resources. (This does not deny that the devolution of decision making to the school level does provide schools with some opportunity to make individual choice, but the reality is that once a school makes the technology choice future funding will be tied to that. Information technology is expensive to maintain and to replace.) We see before our eyes an emerging educational system that is becoming obsessed with answers. (Box A will do more, faster and better than any other box: therefore, schools need Box A.) But why do schools need boxes at all? What questions will they help teachers and students solve? Remember when schools were invaded by Apple IIs? They were going to provide a whole range of new answers. In some schools such technology provided the opportunity for a range of new teaching and learning experiences. But in many schools they tended to be used as glorified typewriters with a glorified price tag!

We talk about teacher-librarians as though every school has one. We assume that there is a common bond among teacher-librarians: that they are all competent, alive and well. We assume that there are sufficient opportunities for aspiring teacher-librarians to take a professional qualification, and for experienced teacher-librarians, ample professional development opportunities exist. These assumptions are wrong, very wrong.

Many schools do not have a teacher-librarian. Many small schools have a weekly teacher-librarian allocation of a few hours. The likelihood of such allocations being taken seriously or filled by a qualified applicant are remote. Many schools that do have a teacher-librarian, don't! A percentage of those who are titled 'teacher-librarian' have no specialist qualification in the field. Some employers accept short inservice programs as an acceptable measure of competency. Such situations would not be tolerated in other areas of education, nor would they be accepted in other professions. Can you imagine your local medical practitioner hanging out a shingle with the words 'Brain Surgeon' expecting to stay in business. Can you imagine the uproar if the local electrician suddenly decided that she was going to dabble in the odd bit of commercial plumbing!

The universities that offer education for teacher-librarianship are not overrun with applications and too few graduate from these programs to make any significant impact on Australia's 10,000 schools. In-school funding, and employer wide funding for the professional development of teachers is at an all time low which means that the maintenance of skill levels will soon become problematic.

The teacher-librarian world is certainly a mixed bag. A comparison between the services offered by a 'switched on' private school and smallish 'bush' primary school funded from the public purse will quickly demonstrate that. But whose world is it and who has the naming rights in this world? We can readily accept that in 1997 a teacher-librarian's day looks rather different from what it did in 1987, 1977 or 1967, and among schools there may be little similarity. But does this mean that the teacher-librarian's role has changed? And who should make this judgement? Is the title 'teacher-librarian' beyond its use-by-date, and who should decide that? Should teacher-librarians expect that teachers joining their rank have a specialist university qualification? Should they insist that a teacher, appointed as teacher-librarian but not qualified as one, be referred to as something else—teacher-in-charge of library resource centre—for example? Who has the muscle to win this potential fight?

Given the thoughts above it was interesting to observe the debates that unfolded on the teacher-librarianship listservs, LM_NET and OZTL_NET, during 1995/6 with respect to the role and appropriate nomenclature for school-based information professionals. Likewise it was interesting to be involved in the debate about career paths for teacher-librarians and other school-based information professionals that was raised in a concept paper at an Australian national conference on electronic networking and Australia's schools (Hay and Kallenberger, 1996), emerged on OZTL_NET in 1996 and was expanded in the August 1996 issue of *Orana*. At the time there was a transient thought of 'who cares' which took on more substance when time was found to read Poston-Anderson's very interesting research report in which she articulated the use of metaphor as a simple but robust technique to uncover what those involved with school libraries saw as the purpose of the school library (Poston-Anderson, 1996).

The question triggered by Poston-Anderson's research was: 'could the metaphor technique be used appropriately to identify what stakeholders thought of competing nomenclature and would perceptions differ between stakeholder groups?' Did anyone care? There is a growing literature demonstrating the impact of metaphor on the way we think, on our language, and on systems of scientific and everyday knowledge. Aristotle was the first significant writer to identify the role of metaphor in the production of knowledge. Metaphor is a figure of speech used to make a distinction in one's meaning on the basis of a comparison and substitution of 'real' meaning for the counterfeit meaning (Krug, 1991).

The use of metaphor as a way of seeking meaning was pioneered by Pepper (1942) and Kuhn (1970) and has been popularized by Morgan (1983, 1986) whose concern is to show how researchers can use the creative insights generated by metaphor to create new ways of understanding organisations. Morgan (1986) suggests the use of metaphor implies "a way of thinking and a way of seeing that pervade how we understand our world generally," and that one of the powerful implications for a researcher of perception and attitude is that metaphor "always produces...[a] kind of one-sided insight." (pp.12-13)

Other influential writers have suggested that researchers ought to pay more attention to the role of metaphor. (See, for example, Schon 1963, 1979; White, 1978). The impact of metaphor on language and communication generally has been subjected to detailed analysis by Lakoff and Johnson (1980). The role of metaphor in creative imagination and science has been treated by Koestler (1969) and Miller (1978). Brown (1977) has shown the metaphorical basis of social theory.

Lakoff and Johnson (1980) argue that most of our ordinary conceptual system is metaphorical in nature. The essence of metaphor is understanding and experiencing one kind of thing in terms of another and embraces the general process of image crossing whereby A is seen as B. They suggest that metaphor is not just a matter of language, that is, of mere words. Human thought processes are largely metaphorical. Metaphors as linguistic expressions are possible precisely because there are metaphors in a person's conceptual system. Since metaphorical expressions in language are tied to metaphorical concepts in a systematic way, it is possible to employ metaphorical linguistic expressions to study the nature of metaphorical concepts and to gain an understanding of the metaphorical nature of roles and nomenclature.

Poston-Anderson (1996) argues that teachers develop a culture using symbolic forms such as story, myth, ritual and language. She argues that these elements become the social glue that provides meaning and sensemaking within organisations. Metaphors provide windows of understanding presented in ways that are often not confronting and thereby provide meaning. Metaphor draws our attention to distinctive but partial aspects as in the example of the man who fought like a lion. Lakoff and Johnson (1980) express this as:

> The very systematicity that allows us to comprehend one aspect of a concept in terms of another will necessarily hide other aspects of the concept. In allowing us to focus one aspect of a concept a metaphorical concept can keep us from focusing on other aspects of the concept that are inconsistent with that metaphor. (p. 10)

This is the nature of metaphor. If the metaphor could provide more than a partial picture it would be the real thing, not a representation of that. To the extent that teacher-librarians are a complex, multifaceted, contradictory member of the school staff, the metaphor provides a rich possibility as a tool to better understand the way people perceive teacher-librarians.

A search of the ERIC and Australian Education Index databases identified 25 recent applications of the metaphor technique. The technique was employed in the areas of education, organisational administration and communication. These studies gave the researchers confidence that the metaphor technique was an appropriate data gathering technique for this study. The weakness of the technique (the underplay of certain factors) would be balanced by the use of a range of stakeholders and the size of the convenience samples.

For the purposes of this study the researchers employed three convenience samples. The first consisted of teacher-librarians, principals, and support staff representing all the schools in one non-government school district in New South Wales. The second consisted of a group of government and non-government teacher-librarians attending a professional development day in Sydney. The third consisted of a mix of teachers and teacher-librarians from the non-government sector who were attending a two day inservice course in Parramatta. In total some 150 teachers were involved in the three activities although not all chose to participate in the research task.

The researchers were interested in identifying the types of metaphor that would be used to identify the positions of: Teacher-Librarian, Information Specialist and Director of Information Services. The instruction to respondents was that they should:

Think of a teacher-librarian that you know and fill in the blank below with a metaphor that best describes your view.
A teacher-librarian is like a ______________________________
[On the reverse side of the paper the respondent was asked to provide an explanation of their metaphor.]

In the case of Information Specialist and Director of Information Services respondents were asked to fill in the blank with a metaphor. It was not assumed that they would necessarily know a person holding a position as Director of Information Services or Information Specialist. It was expected that the metaphors representing teacher-librarians would reflect the history of personal encounter and might therefore be more colorful.

It should be noted that the form of the question strictly speaking requests a simile. And as you might expect our audience (teachers!) were quick to point out the difference between simile and metaphor. In fact the use of simile is regarded as a metaphorical form (Morgan, 1986) and is therefore appropriate.

The responses gathered from subjects have been entered into an Excel spreadsheet by participant type, and nomenclature type. At the time of writing, analysis of the meaning of the metaphors has not been completed. However, the procedure being employed is content analysis whereby metaphors with like characteristics are grouped and regrouped, eventually residing under an appropriate umbrella term or creating 'root metaphors' (Steinhoff and Owens 1989). While many of the metaphors are understandable on their own, it is the explanations of the metaphors offered by respondents that provides additional, helpful cues concerning the perceptions and experiences of subjects—both teacher-librarians and principals. Goulden and Griffin (1995) employed the metaphor technique to identify teacher-student relationships and investigate possible sources of conflict. Likewise this study can identify the differences between the two groups' perceptions potentially shedding light on the nature of the professional relationship between teacher-librarian and principal. Richards' (1992) use of metaphor analysis as a diagnostic tool in identifying professional development needs may also be used in further studies of teacher-librarians and principals regarding the teacher-librarian role.

Two examples of the raw data are given below. Table 1 represents principals metaphors for the term Teacher-Librarian, and Table 2 includes teacher-librarians metaphors for the term Teacher-Librarian.

Table 1: Principal Metaphors for the Term Teacher-Librarian

Bobbing Cork On Wavy Sea	Describes The T-L Who Works In Three Schools
Bower Bird	Collector & Hoarder
Bower Bird	Immediate Relevance Not Always Clear But Can Always Meet Every Need
Breath Of Fresh Air	Not Always There (Pt0/ Essential Part Of School Life/ See Things In Different Light
Butterfly	Brings Joy & Color To Learning
Calming Bird	Humility With Informative /Helpful Disposition
Caterpillar	Segmented & Flexible With An Ability To Methodically Complete A Thousand Tasks
Chain Link	Links Children To World Of Work
Collaborative Colleague	Someone With Whom Teachers Can Plan & Teach With
Comforting Mother	A Friend To Students
Dragon	Very Protective Of Resources & Roars At Library Users
Dynamo	Full Of Energy, Motivating Others Through Her Enthusiasm
Enthusiastic Agent	Advertising Has To Sell Herself
Fountain	A Constant Source Of Ideas & Resources To Develop Life Long Learning
Geni	Of Great Assistance
Grasshopper	Able To Jump In Any Direction As Required
Helicopter	Buzzing, Hovering, Finding The Best Route
Honey Bee	Busy, Provides Sustenance, Great Sense Of Direction

Idea	Something That Goes In & Out Of People's Consciousness
Intelligent Piranah	Always Snappy, Knows Everything
Intelligent Sponge	Able To Absorb A Wealth Of Information & Use It Appropriately
Isp	Providing Access
Jack Of All Trades	Multi-Skilled
Owl	Wise Observer & Reactor
Rock	Always There As Planned
Rock Of Gibralter	Must Be There To Support Others
Shelter In A Storm	Offers A Place Of Refuge For The Mis-Fits In The Playground
Sponge	The Info That The T-L Holds Is Not Always Obvious
Sponge	Soaking Up All Available Resources & Knowledge
Sunray	Light Up The Love Of Discovery
Terrier	Snaps At People Continually
Tree	Has Many Branches, Is Living/Dynamic/, Associated With Growth, Needs To Be Nourished
Trendy	Dinosaur Tries To Keep Up With Trends But Feels Threatened By The
Technology Creep	

Figure 2: Teacher-Librarian Metaphors for the Term 'Teacher-Librarian'

Bower Bird	Resourcesful, Scrounge, Covers Much Territory
Bower Bird	Always Seeking To Fill The Nest
Bower Bird	Territorial/Possesive/Isolated/Low Profile
(Creative) Bower Bird	Collects Everything With Flair
Broken Record	Always Repeats "I want I Want I Want"
Computer	Supposed To Have Information On Every Subject On Demand
Encyclopeadia	Source Of All Information
Fairy Godmother	Waves Her Wand Of Magic Dust To Create Conducive Atmosphere For
Investigation	
Fountain	Wisdom Ours Forth Enriching School
Fountain	Refreshing Life Giver
Guard	To A Room With A 1000
Doors	Can Open Many Doors To Knowledge/Determines The Best For Each Child
Holey Piece Of Plastic	Some Demands Bounce, Others Go Straight Through
Horse With Blinkers	Thinks That The Library Is The Centre Of School's Learning/ Forgets That Teachers Teach Information Skills
Knitting Needle	Takes The Threads From The Classroom & Knits Them To A Whole
Miracle Worker	The Impossible Is Done Now, Miracles Take A Bit Longer
One-Eyed Monster	Needs Of Library Greater Than Needs Of Students-Priorities All Wrong
Right Hand	Wonderful Resource For Teachers/ Indispensible
Satellite Dish	Receives Info From Cosmos, Meaningfully Packages, & Disseminates It
	Service For All Attends To All Classes seven All Info Needs
Signal Person	She Shows Children The Best Way To Find Where They Want To Go
Teachers Aide	
Time Warped Building	All Things Must Be In Place/ An Unused Place
Volcano	Bursting Forth With Information
Washing Machine Agitator	Always Busy Going Back & Forth
Water Reservoir	Sustaining Power Of School
Wave	

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DELPHI STUDIES: THE VALUE OF EXPERT OPINION BRIDGING THE GAP—DATA TO KNOWLEDGE

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ABSTRACT

This paper reports an as yet unfinished Delphi investigation of information management futures. Too often the personal aspect of information provision is overlooked in the light of the dramatic development of technology. However, behind every technological advance there is a provider whose role it is to source, organise and disseminate the information gleaned via that technology.

To investigate what is at heart a very subjective situation—an individual's reaction to a changing work place—the Delphi approach seemed most appropriate. Designed to collect expert opinions as independent, considered views on a commonly debated topic, this method offered structure and validity without a framework too formal to allow for personal, subjective considerations.

A Delphi approach provides a unique methodology for studying the trend of future developments. In this particular study it demonstrated a clear perception by senior members of the profession as to the future.

INTRODUCTION

Crucial to the growing strains on traditional information provision is the current state, or perhaps the everchanging state, of technology. It now appears that data managers need to be intensively technological. Cost factors within education circles, the changing nature of curriculum and training programmes of the immediate past combine to limit financial and skill support to staff. The ever-increasing stock of online data and its attendant selection difficulties further challenge the providers. What then is the future of the Teacher-Librarian/ Library Media Specialist?

To investigate this, a Delphi study was carried out in conjunction with the Charles Sturt University, New South Wales. All discussion rounds were completed by January 1997 at which time detailed assessment of the responses was made. This process is based on the theory that by coalescing and analysing a variety of expert opinion, some predictions can be made regarding the future. Based on these predictions it is possible to provide meaningful direction for the present as well as future training of staff towards that end result. It is a process of considerable value and assistance in the analysis of more subjective material—in this case, aspects of information handling staff, their role, present and future.

Among those participating in the process were prominent data provision figures from seven countries (USA, UK, Australia, Iceland, New Zealand, Denmark, Canada), including representatives of several branches of data provision—academic (including Clyde, Eisenberg, Dillon, Haycock, Lupton, Myklebust, Oberg), information practitioners (including Johnson, Clausen, Grey, Bonanno) and institutional (including Clouten, Lisle, Milbury, Walker, Lockwood).

The Nature of the Beast

Delphi studies are not new. They stem from developments in the 1960s. "In 1969 the number of Delphi studies that had been done could be counted in three digits; today, in 1974, the figure may have already reached four digits." (Linstone &Turoff, 1975) Since that time a considerable number of Delphi studies have been carried out with government departments in Japan (New Scientist, 1993, October 2, p.3) to assess future economic trends, in Britain for Science and Technology forecasting (Times Higher Education Supplement, 1995, March 24, p.15) and in the United States for similar technology forecasting (see, for example, Doyle 1992; USA Today 1995, May, p.85.).

The Delphi technique is designed to collect opinions from a group of experts in a given discipline. By collecting these opinions, resubmitting them a number of times and providing continuous feedback with each new round of consideration, a satisfactory consensus may be reached. This consensus may be considered as a relevant and valid measure of the future in that it is the summation of the collected opinions of experts.

Christine Doyle (1992) presented a study of information literacy in America. Her analysis employed the same methodology as does the present study. Using Delphi method, she attempted to reach some consensus as to a definition of information literacy in the light of American national education goals. As a part of American development and the National U.S. Forum on Information Literacy (NFIL), the study was a stepping stone towards greater emphasis on the importance of information literacy as a vehicle towards successful outcomes in education.

What was made more clear in the Doyle study was that the Delphi technique was highly appropriate for the study, particularly in the light of its not easily permitting a more formal methodology. She identified several reasons why this was the case. Among these was the need in her study of a consensus regarding a definition of information literacy, the broad diversity of backgrounds over which such a consensus had to be gained and the inherent value of "subjective judgements collectively discussed" to her topic (Doyle, 1992, p. 38). Some of these factors exist in the present study suggesting the value of the technique for this particular project.

The literature on Delphi investigations of information management is sparse. The present work is very indebted to a project carried out in Denmark by Helge Clausen in 1991-92 (Clausen, 1992). Clausen's work concentrated on the Internet and its attendant Computer-Mediated Communications aspects but his methodology, modified from that suggested in Linstone and Turoff (1975), has formed the basis for the present methodology.

A Delphi is largely a "structuring of human communications." (Linstone & Turoff, 1975, p. 6) In this regard its philosophy has never been closely defined. Attempts by Helmer and Rescher (1989) and Scheele (in Linstone & Turoff, 1975, p. 37ff) highlight the "reality" of collected assumptions as a suitably secure basis on which to formulate future predictions. Scheele notes that interaction and impact within a group dynamic produces a collection of realities which are a "significant" result in themselves (Linstone &Turoff, 1975, p. 40). The success and validity of the Delphi process is very much dependant on concepts of "common reality" so it becomes important to ensure that any study using this approach seeks to identify these realities. Part of the process then becomes concerned with seeking reality views, exploring agendas and gestalts, identifying latent options and issues, explaining and extracting from the collected views and from this collected data, generating a common or consensus reality picture.

An exploration with these goals in mind, which considers the collected "realities" of a group of individuals, each with considerable knowledge of their field, is by a process of consensus, most likely to yield a series of realities. Upon these realities, then, can be built some assumptions of the future. Within the Delphi process too, is an element of group identity. In the case of most Delphi processes this identity is more with the topic than with other individuals in the group. Keeping an element of anonymity directs panel attention to the topic and for this reason, the present study has chosen the anonymous approach.

In summary, "each Delphi interaction produces a shared reality which is initially formulated by the panellists from their expectations ... this particular reality is elaborated and modified by the succeeding interactions." (Lindstone & Turoff, 1975, p. 64)

Of considerable importance are two characteristics of Delphi method. These, outlined in Linstone and Turoff (1975, pp. 191-321) are the lack of a generally positive relationship between group size and group performance and the decreasing variance of responses with each progressive round of discussion. This latter aspect is most clearly seen from about the third round.

The first consideration is important in that it allows a panel of as few as fifteen can still yield meaningful conclusions (Martyn & Lancaster, 1981, p. 62). The second is important as it produces some manageable "result."

In Practice

The actual Delphi process utilised for the present study followed the suggested practices outlined in the work of Lindstone and Turoff (1975, esp. p. 39ff). Three major rounds of discussion was allowed following an initial limited round to quickly assess the general topic and some suggested approaches (a more detailed methodology is provided below). As an important part of the process several aspects of methodology were considered to be most important.

The issue of anonymity was considered of primary importance. There was no provision in the current study for collusion between team members although most would have been aware of the identity of some names in particular. Following each round of considerations, comments made and arguments put forward were recirculated among the team without names being attached. This was a deliberate attempt to concentrate team members on their views of major developments as well as the fundamental arguments without allowing them to be deflected by another members perceived academic stature, experience or location. Thus, the tendency to judge only those developments suggested by the most notable panellists was largely eliminated by virtue of anonymity.

The group of experts is not a random sample and cannot be treated as such. Despite this, the number is important as is the spread. While conventional statistical analysis cannot be applied to the Delphi sample and the method is largely intuitive/qualitative it is important that the results may lead to quantitative findings. Kristensen (1990) lists four important advantages of the Delphi system. The method promotes vision, is well suited to new ways of thinking and innovation, makes possible an analysis free from historical ties and finally, it is an economical means of analysis provided the choice of panel members is carried out with care. Importantly, although a Delphi study is a unique phenomenon and consequently unreproducible, its findings may nevertheless be reliable and be useable in forecasting (Clausen, 1992, p. 188).

Method—Specific

The present study was initially planned so as to carry out the Delphi part of the investigation in eight specific stages. These covered the initial formation of the team through to final synthesis of the results and discussions which took place. Each stage is very briefly outlined below.

Stage A. Initial request for members; completed February 1996.

Stage B. Check on members for team balance. February 1996. Request from each member for statement of:

- Current position
- Qualifications.
- Experience in information/data management/resource provision
- Self perception of current role; e.g., administrator, practitioner, etc.
- Suggested topic with issues to be clarified. Definitions, limits, time covered by study.

Stage C. Round 1. Initial topic discussion. April, 1996. Circulate topic with discussed definitions, etc, included. Discussion by each member.

Stage D. Analysis 1: May, 1996. Consider and relate each response. Gather points of consensus and divergence. Note any areas of confusion arising from misunderstandings, or cultural differences, etc. Formulate a Round 2 statement showing the consensus and divergence clearly as well as introducing new considerations which were made relevant by first round debate. Fringe issues, related matters, etc. Indicated where these fit into the field of study suggested under Stage B.

Stage E. Round 2 Debate: June, 1996. Discuss relevant issues and outcomes of Round 1 as summed up in Stage D. Leading questions here should highlight convergence and divergence shown in the first round to attempt some further consensus among the team. Relevant fringe issues shown up in Round 1 should also be included.

Stage F. Analysis of Round 2; July, 1996. Like that following Round 1, analysis at this stage should look carefully at areas of agreement and disagreement to the end of locating points of consensus. It may be useful at this stage to check statistically on levels of deviation between participants in the first and second rounds so as to identify the "Delphi effect" and thus assist with authentication of the whole process. Presence of the effect at this stage will help emphasise the validity of the team and the process. Lack of clear Delphi effect may well indicate some areas are in which the process is not reflecting correct Delphi practice.

Stage G. Round 3: August, 1996. Final discussion time for the group participants. Final attempt must be made in framing the round discussion material to finding a suitable consensus, summation of matters arising from the first two rounds so as to finally check participants are satisfied that the material reflects their views. Final clarification of issues, fringe issues, and related matters. Clear identification of time line arising from debate e.g., "By 1997..."; "By 1998 ...," etc. Produce matters such as implications of the findings, viz., "if...by 1998, then why not...now?"; "if ... by 1999 then should we set up different training programmes?"

Stage H. Final Analysis and Presentation of Findings. Synthesis of all responses, analysis of results, validity of the whole programme and its participants. Points of consensus, irreconcilable differences, etc. Together with an examination of how and why these came about.

First Impressions

First impressions of the process were exciting to say the least. The concept of actually canvassing the opinions of professionals and experts intimately acquainted with the field presented quite a challenge. Essentially, the process lived up to the high expectations. Discussion has been considerable, the input from each team member was at times prodigious and the final result surprisingly unanimous, though not wildly radical.

This was potentially one of the more interesting aspects considered in the first instance. Talking with others who had run Delphi studies, some had gained very clear and complete outcomes, others had ended with very indecisive conclusions. The results seemed to be quite unpredictable. As an initial expectation I had pondered the possibility of the profession being sufficiently coherent as to make a more decisive conclusion most likely. This was certainly the case. A decision reached by almost thirty people from seven different countries which only saw one major dissenter, must be rather unusual. It does demonstrate a very coherent view of the profession and a very clear view of intended (or foreseen) future directions.

On Methodologies

Definition. One problem that besets the investigator in the information field is that of definition. What's in a name? There is an important issue here. Terminology can sometimes obstruct the view and sideline effective consideration of this important issue. In the educational context one often hears of Teacher-Librarians or Media Specialists. In the more open field of business one can occasionally refer to Information Manager or Data Manager in much the same context. For the purposes of this study reference was made generically to a person whose primary task it is to collect, catalogue and disseminate information effectively from many sources to users with many needs.

Method. One further difficulty which was not fully perceived initially but which has definitely affected the outcome has been the sheer volume of the input. In rounds following the first, members input had to be drastically edited to make communication possible. It was simply out of the question to circulate more than 100 typed pages of discussion material each round. In an ideal world the entire group would have been able to peruse the entire discussion material but in reality, many of the team members were hard pressed reading the edited material as it was.

CONCLUSION

The most significant result of this study has been undoubtedly, the unanimous outcome. In the final analysis, nine statements or premises emerged to which all but one member subscribed. These are:

- While technology has impacted on Teacher-Librarian activity, the core functions of teaching information processes, evaluation and communication remain. Access to greater amounts of information has increased both the extent of the task and its importance.

- Stress is present for the Teacher-Librarian of the future both in terms of learning curve and of greater expectations. There is increased public pressure to perform and a greater financial role ahead for most Teacher-Librarians.

- Future technical trends in the profession focus on digital technology and some degree of virtual library development. These trends will only increase the need for personal tuition and close teacher-librarian/client (student) liaison.

- Future non-technical trends in the profession focus on teaching of process (not product), on curriculum involvement and in greater time outside library "walls" collaborating with general teaching staff.

- Future "devices" that will impact on teacher-librarian activity will include (probably in order of appearance):
    - internet
    - multimedia
    - intelligent agent
    - virtual reality

  Some of these are already present and influential.

- One future problem is likely as a direct result of technology; there will be a widening gap between the resource "haves" and "have nots." Inequity will be a hallmark of libraries in 2006. Sharing resources freely may go some way toward easing this problem.

- Essential areas of future teacher-librarians activity include (from highest to lowest priority):
    - information literacy
    - client support/interaction
    - information management
    - computer skills
    - lobbying and advocacy
    - managing change

- Educational administrators, to ensure best resourcing results, should integrate resources with learning most intimately. Teacher-librarians should become whole school teachers often outside identified library "walls." Resourcing should be clearly recognised as central to successful education and curriculum delivery—budgeting and staffing should reflect this.

- Teacher-librarians will require more adequate technical support in the future. Efficient administrations will recognise this and provide same.

One aspect of methodology requiring attention is actual phraseology. This study attempted to investigate, not the role of teacher-librarians generally but only that part of their role which was impacted by technology. Clearly, the actual words used in a process of this sort are more important than they are in a spoken communication as each correspondent has time to consider them in depth.

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Theme 7

SUMMATION

THE INFORMATION LITERACY MOVEMENT OF THE SCHOOL LIBRARY MEDIA FIELD: A PRELIMINARY SUMMARY OF THE RESEARCH

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ABSTRACT

The authors summarize the proceedings of two major conferences, the Treasure Mountain Research Retreat VI and the International Association School Librarianship conference. In addition, the authors look at the entire history of information literacy and bring together the theory development, the research, and practice in school libraries since the late 1980s. Information literacy and critical thinking ideas from the fields of education, cognitive psychology and educational technology have been included.

INTRODUCTION

Two major events happened in 1997 that caused the authors to propose a review of the research on information literacy. The first was the Treasure Mountain Research Retreat VI conference in Portland, Oregon in April and the International Association of School Librarianship conference in Vancouver, British Columbia in July. Both conferences centered on progress in research about information literacy and both had full conference proceedings. The time seemed right for a full review since it had been three full years since Christina Doyle had published her review of information literacy and much research and progress had been made since her publication.

The purpose of this paper is to review the developments, supportive research, and the major documents associated with the information literacy movement as it has developed since the late 1980s. An effort has been made to demonstrate that we as professionals are not alone in this interest but have colleagues with similar ideas across the field of education and from cognitive psychology. The review here should not be construed to mean that the authors support the notion that the constructivist approach is "the only way to teach or learn," since the reality of much educational practice points to a wide variety of successful teaching and learning styles.

This paper is divided into several sections. In the first, a variety of definitions of information literacy are given. This section is followed by a listing of the most prevalent information literacy models that are being used in the field. The assumption has been made that most readers will have ready access to those models and so they are not reproduced here. The models in current use are derivations of important earlier work and so the authors have traced that development for the reader beginning with work done in Great Britain and its importation into the United States and into several other countries.

To show the relationship between what school library media specialists are proposing and other disciplines, related concepts and models have been included - some from persons who specialize in technology, others from cognitive psychologists. Wherever possible, the authors have included the models found or at least abbreviations thereof.

The last two sections of the paper focus on the research done in teaching information literacy as a process and then monitoring student behavior during the research. These two areas have received the most attention in the past ten years.

At first, the authors were only going to summarize the papers from the Oregon and British Columbia Conferences, However, their interest and research led them much further. Searches of the authors' extensive libraries, plus back issues of *School Library Media Quarterly*, *Emergency Librarian* and *School Library Media Annual* were included. The authors plan a more comprehensive view in the near future.

HISTORICAL ANTECEDENTS OF CRITICAL THINKING AND THE FIELD OF SCHOOL LIBRARIES

Modern education borrowed rather than created the idea of critical thinking. Its roots are easily traced to the ideas of Plato and Aristotle and onward through Aquinas, Descartes, Bacon, Machiavelli, Hobbes, Locke, Newton, Boyle and many others. The scientific method, a system of knowing, has ruled much of the industrialized world in the 19th and 20th centuries and is considered a foundational element in the advance of society.

In education, the teacher as authority and the student as passive learner has held great weight in the classroom and was encouraged by the behaviorist work of B.F. Skinner. Many of the ideas of instructional development in the world of educational technology stemmed from the behaviorist viewpoint and led to notions that if instruction is carefully designed, anyone can master any concept of knowledge.

A second rival school of thought began with the work of John Dewey in the 1930s and Benjamin Bloom[1] in 1956. Armed with developments in cognitive and brain research, educators created theories of inquiry or constructivism. This focus challenged teachers in restructured schools to leave their pulpits as sages on the stage to become guides on the side. Numerous reports and research studies have been released demonstrating that constructivist-based education is a major key to academic achievement. An example of such a report is a brief monograph by Newmann and Wehlage entitled: *Successful School Restructuring.*[2]

In the field of school libraries, the same transformation has taken place. Early interest in the role of the library media specialist in instructional design, popularized first in Canada and then in the United States by Loertscher and Turner was known as 'resource-based teaching.' That movement evolved into increased interest in information literacy (the library media version of constructivism and critical thinking). The term'resource-based learning' was popularized in the late 1980s signifying the adoption of information literacy principles in learning projects using a wide variety of information sources and technologies. Resource based learning is a school library term for inquiry-based learning or project-based learning, terms known more widely in the education field.

Meanwhile, library media specialists find themselves in a very interesting mix of philosophies and practices. Some teachers and full faculties have adopted a clear focus of either behaviorism or constructivism. Other schools allow a wide variety of teaching and learning styles to flourish in the same learning environment. Thus, library media specialists must be able to operate comfortably in both camps as they try to bring the best materials and technology into the learning process.

DEFINITIONS OF INFORMATION LITERACY

A variety of groups and persons defined information literacy in the last ten years. Most concentrate on a series of behaviors that a person possessing this quality might exhibit. In the 1989 American Library Association's statement,[3] the following description is given:

> To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the information needed...

> Ultimately information literate people are those who have learned how to learn. They know how to learn because they know how information is organized, how to find information, and how to use information in such a way that others can learn from them.

In 1992, Doyle[4] used the Delphi technique to gain consensus among scholars on the following definition:

> Information literacy is the ability to access, evaluate and use information from a variety of sources.

By 1997, Holloway, Doyle and Lindsay[5] added to the above definition by saying that "Information literacy is best thought of as a verb, a way of doing information." Then they translate this notion of a verb into the area of telecommunications:

> Information literacy in telecommunications is achieved when learners know when to use on-line resources, how to access information competently, how to evaluate information for accuracy and significance, and how to use this information to communicate effectively. Learners who are able to do this have a life long skills to meet the challenges of the information age.[6]

Woolls[7] suggests that because information literacy is interwoven with critical thinking and information literacy requires the use of critical thinking skills, the role for the school library media specialist is much greater. She did a summary of various definitions of information literacy from a variety of current fields and found the following from the critical thinking literature:

> Critical thinking is the intellectual disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.[8]

King,[9] another critical thinking expert, says "The hallmark of a critical thinker is an inquiring mind." According to Moody,[10] "There is a distinct difference, however between locating sources of information and locating and interpreting information within sources. She shares Beyer's list[11] of major critical thinking skills:

> Distinguishing between verifiable facts and value claims.
> Distinguishing relevant from irrelevant information, claims, or reasons.
> Determining the factual accuracy of a statement.
> Determining the credibility of a source.
> Identifying ambiguous claims or arguments.
> Identifying unstated assumptions.
> Detecting bias.
> Identifying logical fallacies.
> Recognizing logical inconsistencies in a line of reasoning.
> Determining the strength of an argument or claim.

Quellmalz[12] approached the subject from the related concept of higher-order thinking:

> Students engage in purposeful, extended lines of thought during which they identify the task or problem type, define and clarify essential elements and terms, judge and connect relevant information, and evaluate the adequacy of information and procedures for drawing conclusions and of solving problems.

After looking at all of the various definitions and perspectives, Woolls[13] proposed that information literacy is a subset of the concept of critical thinking. She pictures the idea that information literacy is something that happens to a learner somewhere between believing and doing:

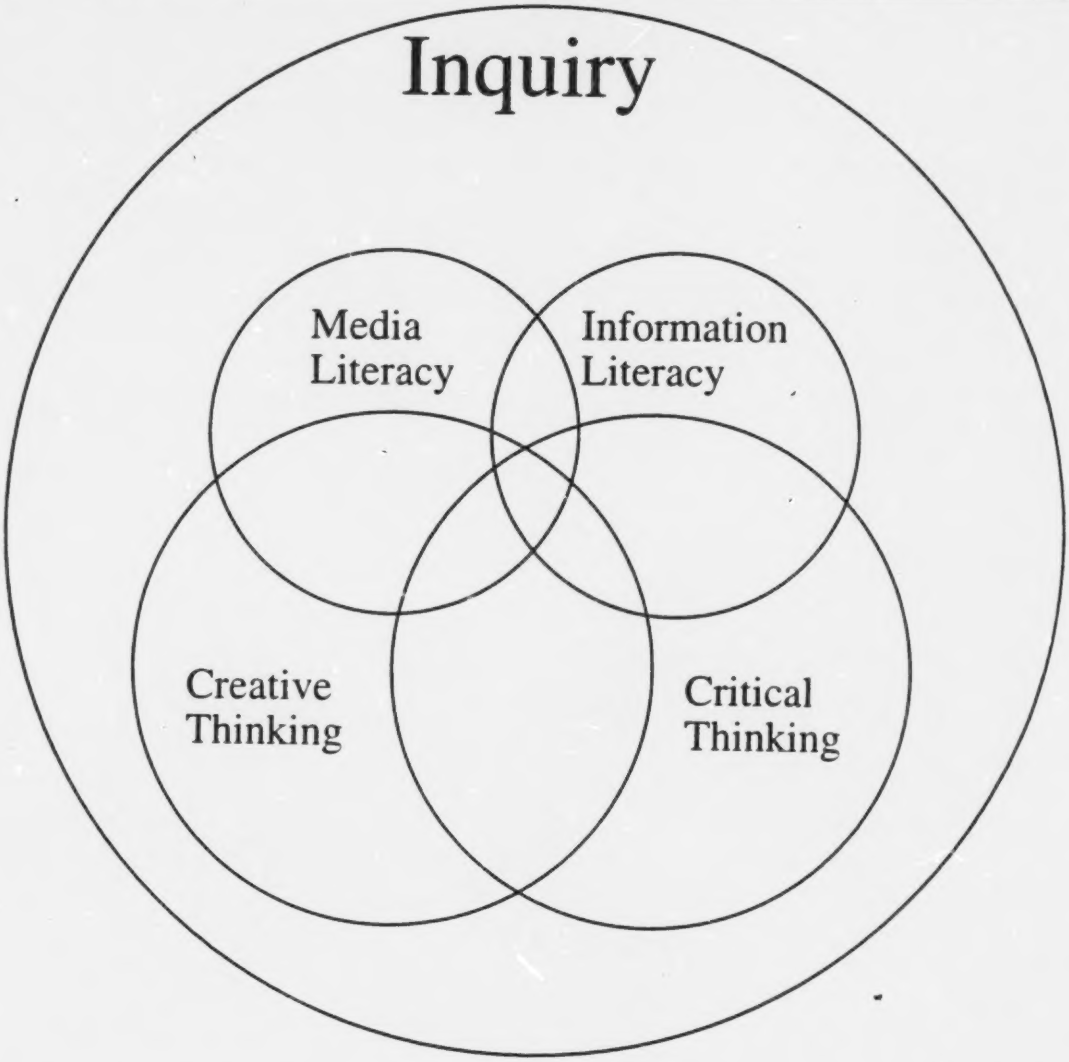
Critical Thinking

BELIEVE	apply	decision-making	presentations	questioning
reflection	analyze	infer	transfer	meta-cognition
scripting	verify	**INFORMATION LITERACY**		sound evidence
editing	problem solving	substantiate	conceptualize	synthesize
techniques	challenge	experience	observation	**DO**

Critical Thinking

Eileen Daniel[14] looked at the literatures both of the K-12 library arena and the academic library literature and found a striking overlap in the notions of information literacy skills, library and information handling skills, and computer skills. Academic librarians worry through their literature that students are ill-equipped to do simple things such as finding and using periodical articles, understanding the principles of computer searching, and how libraries are organized. They complain that students do not understand a process of investigation from formulating a research question through the production of a product.

Summing up all of the elements of the critical thinking literature, Callison and Tilley[15] draw the following model illustrating the relationship between all the various definitions and perspectives:


Inquiry
Media Literacy
Information Literacy
Creative Thinking
Critical Thinking

CURRENT MODELS OF INFORMATION LITERACY IN POPULAR USE (BY YEAR OF INTRODUCTION)

Of the many models that have appeared in the literature in the past 10 years, a few have gained substantial acceptance in the field. The following six models are presented in order of the year they were first published in the school library media literature.

Stripling and Pitts Research Process Model, 1988[16]

The Stripling/Pitts model gained wide acceptance upon publication. It guided students through each stage of creating a research paper, but at each stage, the student was asked to reflect upon what had just been done.

The Kuhlthau Model of the Search Process, 1989[17]

In 1989, Kuhlthau published her Search Process Model based upon a major research project done in high schools with students engaged in research. This model not only became popular with the library media profession but by 1997 was used in a number of library schools as a text showing how users face the research process not only as organized or disorganized investigators, but also their confidence level at various stages of their research.

Eisenberg and Berkowitz The Big Six Skills, 1990[18]

The Eisenberg/Berkowitz Big Skills model won instant attention because of its simplicity and ease of use by a wide cross section of the field. Since 1990, both creators of the model have done extensive speaking and traveling and have created The Big Six Listserv of persons in the field using the model. It is by far, the most well known model in the field and is being taught widely to students as a guide for their research.

California School Library Association Information Literacy Model, 1994[19]

The California model was published in a major guide which not only explained the model, but gave many clear suggestions how to incorporate it into a wide variety of instructional systems and content areas. It was published in a second edition in 1997 and incorporated major suggestions and guidance for teaching information literacy to English learners among others.

Pappas and Tepe Pathways to Knowledge Information Skills Model, 1995[20]

Teaming with the Follett Software Company, Pappas and Tepe created an elaborate double-page rendition of information literacy complete with recommended strategies, forms of expression, and methods of teaching and learning embedded in the model. The model was published in three sizable binders containing numerous full length units of instruction as demonstrations for how to apply the model.

AASL and AECT Information Literacy Standards for Student Learning, 1996[21]

As part of the effort to create new standards to replace *Information Power*, the Vision Committee of the Standards Project published a draft of their thinking to the profession for comment. A revised model in final form is due from the publisher some time in 1998.

ANTECEDENTS OF CURRENT MODELS

To say that information literacy is new in the school library media field is not exactly true. Going back to the writing of Frances Henne[22] in the 1960 *Standards for School Library Programs*, she foresaw librarians integrating library skills instruction into classroom content and said the ultimate goal was the "synthesis of information, the extension of knowledge, the analysis and solution of problems, thinking, reflection, the satisfaction of curiosity, the development of trust, or the derivation of pleasure." The profession at large did not heed the forward-looking words of Henne. Instead, the predominant themes of library skills instruction from the 1960s to the 1990s concentrated on the finding and locating of information plus the orientation to the library as a place.

Three reviews of the history of the information literacy movement were found in the literature. Kuhlthau's[23] was published first in 1987 followed by Doyle,[24] in 1994 and most recently by Bruce[25] in 1996. The earliest use of the term "information literacy" is traced to a proposal written in 1974 by Paul Zurkowski[26] for the National Commission on Libraries and Information Science. This report proposed the achievement of a universal information literacy goal by 1984. Much excitement had arisen during the 1960s concerning the development of computer information systems and the exponential rise of an information-based society. By 1983, the *Nation at Risk* report was promoting the concept of a learning society.

Cooke[27] traces the emergence of information literacy models for librarians to work done in Great Britain and published by Michael Marland in his 1981 book entitled *Information Skills in the Secondary Curriculum*. The nine steps to research formed the basis of much work done in that country and around the world:

1. WHAT DO I NEED TO DO?
   (formulated and analyze need)
2. WHERE COULD I GO?
   (identify and appraise likely sources)
3. HOW DO I GET TO THE INFORMATION?
   (trace and locate individual resources)
4. WHICH RESOURCES SHALL I USE?
   (examine, select and reject individual resources)
5. HOW SHALL I USE THE RESOURCES?
   (interrogate resources)
6. WHAT SHOULD I MAKE A RECORD OF?
   (recording and sorting information)
7. HAVE I GOT THE INFORMATION I NEED?
   (interpreting, analyzing, synthesizing, evaluating)
8. HOW SHOULD I PRESENT IT?
   (presenting, communicating)
9. WHAT HAVE I ACHIEVED?
   (evaluation)

This early work was part of a project initiated by the British Library Research and Development Department[28] and resulted in many important publications, particularly the work of Ann Irving[29] that reached the United States with her consultive work in the Treasure Mountain Research Retreat # 2.

Hughes and Rankin[30] had developed a model in 1986 in some work done with the Association for Supervision and Curriculum Development using the following seven steps:

Plan;
Gather information;
Organize information;
Analyze information;
Extend and expand;
Synthesize and create;
Evaluate and apply.

Using the work of Piagé, Taba, and Ehrenberg, Huges also created a developmental structure of thinking skills and process model.

Also in 1986, Eleanor R. Kulleseid[31] did a summary of research in reading and developmental Psychology with implication for practice. At that time, she was introducing the field to cognitive theories not well known in the library media world and which would become the basis of much of the work of information literacy as a process of inquiry learning.

Mancall, Aaron, and Walker published a major article in 1986 entitled "Educating Students to Think: The Role of the School Library Media Program."[32] Their concept was of a program that would help students develop thinking skills, pointed to research on how children and adolescents process information and ideas, and gave practical implications for developing information skills in various curricular areas.

Interest in information literacy was, by this time, gaining momentum around the world. This international interest was boosted by the publication of the United Nations' guidelines for the training of teachers in the integration of libraries and information skills into the curriculum by Hall.[33] She recommended that all teachers be trained in information skills and that the school library concentrate on delivering these skills to students.

In 1987, Carol Kuhlthau[34] published an extremely important document titled: *Information Skills for an Information Society: A review of Research* encouraging school library media specialists to carve out the emerging concept of information literacy as a foundational element of their program. That same year, the Washington Library Media Association[35] published one of the first state guides to information skills. They used a 12-step system to the research process and published a scope and sequence chart for K-12 education listing where each of the skills should be presented and finally mastered.

In 1988, the new national guidelines for school library media programs, *Information Power*,[36] declared that the mission of the school library media center is "to ensure that students and staff are effective users of ideas and information," and called for the library media specialist to become a key participant in the learning process.

Kathleen Craver[37] in the Fall of 1989 published a synthesis article summarizing research studies concerning critical thinking and their implication for library work. She urged the field to become interested in this area of research and to know how to improve the ability of students to find, to synthesize, and to apply information in everyday situations. In the same issue of *School Library Media Quarterly*, Carol Kuhlthau[38] published her own summary of cognitive research and her information literacy model for the first time in the AASL literature.

One of the most significant documents published in the entire library community was a statement on information literacy published by the American Library Association on January 10, 1989. Known simply as the *Final Report*,[39] the document became the basis of much of the discussion about information literacy in both school and academic libraries around the world. After the emergence of this document, Patricia Breivik, the chair of the committee established the National Forum for Information Literacy whose purpose was to popularize the need for information literacy across many organizations and disciplines.

In September of 1989, the first Treasure Mountain Research Retreat[40] was convened in Park City Utah. Since that time, five other such retreats have occurred. This gathering of school library media researchers and practitioners has provided a great boost to the intelligent discussion of research findings and looking toward the future of this profession. At the 1989 meeting, Kathleen Craver reviewed the research related to critical thinking. Carol Kuhlthau also provided a look into her research on the information search process, Barbara Stein provided a glimpse into the world of cognitive learning styles, and Michael Eisenberg reviewed the research in the area of library and information skills.

In 1993, the Wisconsin Educational Media Association published a major document on information literacy that was adopted and published by AASL as a position paper.[41] This paper outlined seven basic elements of the research process: defining the need for information; initiating the search strategy; locating the resources; accessing and comprehending the information; interpreting the information; communicating the information; and evaluating the product and process. The following year, the state of Colorado issued their *Model Information Literacy Guidelines*[42] which gained national attention.

In 1994, a second major summary of the literature was published by Christina Doyle in her ERIC monograph, *Information Literacy in an Information Society: A Concept for the Information Age*.[43] In this document, she reviewed the evolution of the concept of information literacy and demonstrated its relevance in national education goals and curricular concerns.

Elaboration on Information Literacy Models

Kathy Brock[44] published an elaboration on other models previously published models that combined a number of factors from mere instructing in the model, to coaching throughout the model, to facilitating a self-directed student.

O'Connell and Henri[45] adapted earlier information literacy models from an Australian perspective by showing the core activities of the information process as central flanked by the stages of critical thinking and the basic elements of literacy. Their emphasis is to create a model that has meaning to teachers who are most closely linked to learners. Across the world, Wilson[46] also worried that teachers should, but do not possess their own mental model of information literacy.

Loertscher[47] redrew the popular models with the student at the center, emphasizing that what was lacking in many of the models was the need for students to spend a great deal of time consuming the information they find by reading, viewing, and listening. Too many students do not feel they should spend time consuming; they jump over this step IMMDIATELY after information location as they rush toward product creation.

RELATED MODELS AND APPLICATIONS

Numerous experts from related fields of cognitive psychology, education, and educational technology have been working on the constructivist ideas and putting forth their conceptions of how students can benefit from information literacy-related thinking. While the following models do not exhaust what is currently available in the literature, some major work has been pulled together.

From Cognitive Psychology

In a study of cognition and complexity, Reeves[48] proposed a model by which a student might plan to attack a subject about which the student knows very little. He advocates that teaching a student the model directly could help a student assess whether progress is being made from surface learning to deep learning. The model known as the Reeves Knowledge Management Tool consists of ten steps in three major levels:

FOUNDATIONS
1. Build Background (key dates, events, people, places)
2. Know key words
3. Know key concepts/ideas

RELATIONSHIPS
4. Diagram parts of the topic (classes, categories, objects)
5. Diagram activities that take place in your topic (actions)
6. Diagram the environment of the topic (financial, political, technological, sociological, educational, economic, artistic, religious, historical, location)

DEPTH
7. Draw analogies to something you already know (compare, contrast, describe)
8. Visualize (examine/create charts, tables, maps, diagrams)
9. Explain the topic to someone
10. Find themes, patterns, and trends

Information Literacy in the World of Electronic Information

Mark von Wodtke, an architect in environmental design, published an important book to be used by budding architects and also an article in *School Library Media Quarterly* concerning the use of high powered information tools in the thinking process.[49] In putting the mind in the driver's seat over media, von Wodtke posits the following principles:

Mind over Media: People can learn more than which buttons to push. They can learn to work interactively using electronic media.
Navigating: People can learn to navigate in information environments.
Mapping Media Space: People can develop cognitive maps of media space - the information environment they are working in.
Visualization: People can develop models to visualize the realities they are working with.
Creative Thinking: People can learn to use their creative capacity when working electronically.
Collaboration: People can learn and work collaboratively in the emerging electronic information environments.
A Mind Primer: Students can begin to learn creative thinking skills at an early age.

BEST COPY AVAILABLE

Jamison McKenzie is Director of Technology and Media for the Bellingham Public Schools, Bellingham, Washington and a very well known speaker and author of a provocative web journal. His Research Cycle Model,[50] published in 1996 is an attempt to help student deal with information they find on the Internet. The model is as follows:

- Questioning
- Planning
- Gathering
- Sorting and Sifting
- Synthesizing
- Evaluating
- Reporting

Several authors are beginning to warn about major problems in accessing and using electronic information. Fitzgerald[51] lists numerous problems affecting the quality of information gained from using the Internet. She then lists nine skills needed to effectively evaluation electronic information:

1. Adopt critical consciousness for all Internet interaction.
2. Establish prior knowledge through wide browsing, searching and reading.
3. Distinguish between fact and opinion.
4. Evaluate arguments.
5. Compare and contrast related pieces of information from different sites, sources and search engines.
6. Evaluate the reliability of online sources.
7. Identify and detect bias.
8. Learn to interpret the conventions of the Internet.
9. Examine assumptions.

Computer Literacy and Information Literacy

Eisenberg and Johnson took the elements of the Big Six Model and created a checklist for the needed computer skills at each level of model.[52] For example, for the task definition stage, learners should be able to use e-mail, desktop conferencing and idea generating software to help define an information problem. Their checklist covers a full spectrum of technical skills and any learner mastering the list would be considered a technology expert.

Penrod and Douglas[53] define information technology literacy as the ability to:

- operate and communicate with technological devices;
- understand how subsystems fit together to form systems or networks;
- understand documentation and how to utilize applications software;
- understand the basic jargon or terminology of information technology;
- solve problems through the use of technology;
- identify and use alternate sources of information;

discuss the history and future of information technology; and

- have some insight into the ethical and human impact issues of information technology.

Media Literacy

A cousin to information literacy is media literacy that seeks to build critical thinking as young people interact with the mass media. Several important publications have circulated widely in the library media field including David Considine and Gail Haley's book *Visual Messages*.[54] This publication not only outlined the content of visual literacy but gave suggestions in a wide variety of curricular areas for incorporating critical thinking exercises.

A second publication, *Media Alert!: 200 Activities to Create Media-Savvy Kids* by Sue Summers[55] was published in 1997. Fifty different concepts of media literacy are presented with suggested activities for each by age and grade level. Its stated purpose was to guard against young people who are sponges (believing everything they read, view, or hear), or cynics (believing nothing they read, view, or hear), but who are healthy skeptics, equipped with sound judgmental skills.

Pappas and Tepe,[56] in their Treasure Mountain VI paper, urge library media specialists to go beyond the current research process models to embrace media/visual literacy and technology literacy under the same umbrella - to recognize, that students must and do take their information not only from print, but from what they see, hear, and experience and that much of that information is now coming electronically through various technological devices which demand navigational facility.

Critical Thinking

One of the most important theorists of the critical thinking field is Robert H. Ennis.[57] His critical thinking model is oft quoted in the educational literature and looks at critical thinkers from two perspectives, the disposition of the thinker and the ability of the thinker. Ennis lists 12 abilities of the thinker:

1. Focusing on a question
2. Analyzing arguments
3. Asking and answering questions of clarification and/or challenge.
4. Judging the credibility of a source.
5. Observing and judging observation reports.
6. Deducing and judging deductions.
7. Inducing and judging inductions.
8. Making value judgments.
9. Defining terms and judging definitions in three dimensions.
10. Identifying assumptions.
11. Deciding on an action.
12. Interacting with others.

One of the popular centers for critical thinking is the California State University at Sonoma. Located in the famous Napa valley, the Center for Critical Thinking conducts critical thinking seminars each summer. They publish a web page where they list their "35 Dimensions of Critical Thought."[58]

Skills Needed for the Workplace

The SCANS Report, 1992[59] provided the library media community with a great deal of evidence that the information literacy skills are needed to function in the workplace as well as in elementary, secondary, and higher education. SCANS stands for The Secretary's Commission on Achieving Necessary Skills and was published by the U.S. Department of Labor. The competencies were as follows:

SCANS WORKPLACE COMPETENCIES

1. Managing Resources:
  a. Manage time
  b. Manage money
  c. Manage materials
  d. Manage space
  e. Manage staff
2. Exhibiting Interpersonal Skills:
  a. Work on teams
  b. Teach others
  c. Serve customers
  d. Lead work teams
  e. Negotiate with others
  f. Work with different cultures
3. Working with Information:
  a. Acquire/evaluate data
  b. Organize/maintain information
  c. Interpret/communicate data
  d. Process information with computers
4. Applying Systems Knowledge
  a. Work within social systems
  b. Work within technological systems
  c. Work within organizational systems
  d. Monitor/correct system performance
  e. Design/improve systems

SCANS FOUNDATIONS

6. Demonstrating Basic Skills
  a. Reading
  b. Writing
  c. Arithmetic/Mathematics
  d. Speaking
  e. Listening

7. Demonstrating Thinking Skills
  a. Creative thinking
  b. Decision making
  c. Problem solving
  d. Thinking logically
  e. Seeing with the mind's eye
8. Exhibiting Personal Qualities
  a. Individual responsibility
  b. Self-esteem
  c. Sociability
  d. Self-management
  e. Integrity

Helps for Parents

Eisenberg and Berkowitz created a book that translates the Big Six Model into a process parents can use to help children learn while doing school-related homework and assignments. Titled *Helping with Homework: A Parent's Guide to Information Problem-Solving*,[60] the book explains the Big Six and the Super Three stages in information problem solving, explains how technology can help in finding and using information, and gives tips for assisting with assignments in a wide variety of common homework subjects.

Habits of Mind

Loren J. Thompson, in his book, *Habits of the Mind*[61] (popular in the Coalition of Essential Schools group) presents the idea that all content teaching should have as its core the teaching of reasoning skills. Much of what he includes is the teaching of logic systems and the building of knowledge using strict rules of evidence. Each learner, he says, should be a problem solver who has the following five characteristics:

1. A positive attitude.
2. A concern for accuracy.
3. The ability to break the problem into smaller parts.
4. Restraint to avoid guessing.
5. A willingness to be active in the problem solving process.

Thompson supports the use by students of a systematic strategy which he says will not always produce right answers, but it will generate the right questions that will lead to appropriate solutions. These questions will include:

- Can the problem be defined?
- What do we want to achieve?
- What do we know about the problem?
- What don't we know that may be important?
- What assumptions can we make?

I-Search Process

Macrorie[62] in his book *The I-Search Paper* created a very popular method now widely adopted by college and high school English teachers for a student to systematically navigate the research process to create a research paper. The system is very similar to the research process models in the library media field and any teacher using the Macrorie model would instantly recognize the similarities. Nowhere in Marcrorie's book does he list his model in 1,2,3 order in its entirety, but the following is the sense of his method:

1. Let a topic choose you.
2. Search for information
    - find experts or authorities and listen carefully and note useful ideas
    - know a lot about your topic before you interview people
    - ask for advice on the very best information sources
3. Test the information from both experts and other sources.
4. Write the paper
    - What I knew and did not know about the topic before I started.
    - Why I'm writing this paper.
    - The search (story of the hunt).
    - What I learned or did not learn.
5. Edit the paper

Curricular Models

The process of inquiry is being promoted in many curricular areas in national standards created during the federal initiative to reform curriculum in the early 1990s. Mary Dalbotten from the State Department of Education in Minnesota did an extensive analysis of the various national standards documents, extracting information literacy components and then comparing them to the Inquiry Process of Minnesota's Graduation Standards.[63] Her comparison included the following disciplines:

Arts - Dance, Music, Theatre, and Visual Arts[64]
Civics & Government[65]
English/Language Arts[66]
Foreign Language[67]
Geography[68]
Health[69]
History[70]
Mathematics[71]
Physical Education[72]
Science[73]
Social Studies[74]
Technology Education[75]

In virtually all of the standards documents, Dalbotten could find parallel process skills of generating questions, determining feasibility, collecting data, reducing and organizing data, displaying data, and compiling conclusions.

TEACHING INFORMATION LITERACY AS A PROCESS

Application of information literacy models as a replacement for the teaching of traditional library skills is beginning to make inroads among school library media specialists. Once models are internalized in the thinking of the library media specialist, the practical problem is how to apply these models and create intervention strategies into teaching and learning. Numerous techniques have been suggested including direct teaching of the models to children and young people and "just in time" instruction that focuses the teaching in the form of mini-lessons at the time students need a particular information strategy. In this section of the paper, a review of a few of the interventions are presented with the knowledge that there is a great deal of developmental work to be done in translating theory into practical ideas.

Methods of Integrating Information Skills Into Instruction

VanDeusen and Tallman[76] examined the relationship between scheduling students into the library media center and how information skills instruction was performed. They found that in the elementary school when library media specialists used a mixture of flexible schedule and fixed schedule, that information skills were integrated more often, particularly when the principal's expectation of integrated skills was high.

Kuhlthau[77] in a case study report, made the following comments: "This study indicates that successful implementation of the process approach to information skills calls for a shared philosophy of learning. It requires development of an instructional team and a break with the traditional concept of one teacher to one classroom. It requires a commitment to developing skills for living, working, and participating in changing technological society. It demands highly competent educators who instruct, guide, coach, and assess students and who design and redesign programs to enhance the learning process."

Teaching the Big Six

Much of the success is due to the popularization of The Big Six Skills of Eisenberg and Berkowitz. Both authors do extensive speaking engagements, and have published books,[78] videos,[79] and have a listserv.[80]

Major Manuals of Theory and Practice

Two major publications gained acceptance with their practical approach to the teaching of information literacy. The first was Stripling and Pitts' *Brainstorms and Blueprints*[81] and the second was *From Library Skills to Information Literacy: A Handbook to the 21st Century*[82] first published in 1994 and now in its second edition (1997).

An earlier publication served to introduce many in the profession to information literacy. Carol Kuhlthau, chair of the Information Skills Task Force for AASL in 1990-91 published a collection of original pieces on information literacy in an issue of *School Library Media Quarterly* and then as a separate publication entitled *Information Literacy: Learning How to Learn.*[83]

Teaching Text Structure

Because students do much of their reading of content in expository text, teachers of reading have been concerned that even when a reader might read fiction smoothly and with comprehension, that skill does not often translate to expository text. A great deal of professional literature is aimed at "reading in the content areas" and covers such skills as:

a. using format features and organizational aids (title pages, tables of contents, indexes, etc.)
b. using internal text structure (headings and subheadings, lists, text boxes, graphs, tables, marginal notes)
c. skimming and scanning techniques
d. identifying the main idea
e. outlining and notetaking
f. being a critical reader[84]

Fostering Habits of Mind and the Inquiry Process

Stripling,[85] in a major article, reminded the profession that the entire framework of information literacy is connected to the constructivist notion of learning theory. Creating a Thoughtful Learning Cycle model, Stripling shows the relationship between the personal understandings of a students and the inquiry process, the content information, and the assessment of that understanding. She notes that prior learning affects new learning, that learning involves both content and process, that learning is social, and that learning is deeper when supported by a learning framework.

The framework Stripling[86] discusses is very much alive in the educational restructuring movement. The Coalition of Essential Schools, one of the major players in reform, encourages teachers to focus students on the process during any type of inquiry activity with questions such as:

a. How do you know what you know? What's the evidence: Is it credible?

b. What viewpoint are you hearing, seeing, reading? Who is the author? Where is she/he standing? What are his/her intentions?

c. How are things connected to each other? How does "it" fit in? Where have you heard or seen this before?

d. What if...? Supposing that...? Can you imagine alternatives?

e. What difference does it make? Who cares?

Tastad and Collins[87] in their observation of a middle school writing center feel that students will not attempt to build habits of mind and see information query as a process unless the teacher is using a constructivist approach to learning. They feel that a teacher using a lecture method of instruction is very unlikely to encourage any process concepts in their pupil's behavior. In their research study, when a writing center was set up to encourage personal inquiry methods, it immediately conflicted with the teaching strategies of any teacher using the behaviorist model.

MONITORING STUDENT BEHAVIOR DURING THE RESEARCH PROCESS

Carol Kuhlthau urged library media specialists to monitor student behavior during the information sleeking process to maximize the contribution and supportive nature of the human interface in the entire process. Indeed, Kuhlthau discovered that feelings of confidence are somewhat akin to riding a roller coaster during an information quest. Numerous other studies are beginning to probe student behavior to look for clues about successes and failures, attitudes and feelings.

Imposed Questions vs. Their Own Questions

Not surprisingly, Melssa Gross[88] seeking to provide some baseline data found that as children enter school and begin to interact with the information bank in the school library, they do so in Kindergarten and first grade from a basis of curiosity about their own questions and interest, but by the time they are in 6th grade, questions imposed by adults dominate their information seeking motivation.

Background Knowledge and Information Skills

In a study of eleventh and twelfth grade science students on a library assignment, Pitts[89] studied student's information seeking behavior. While concluding that the students learned very little and received little guidance during their library assignment, Pitts created the following equations relating mental models to information skills:

1. Novice subject understandings + expert information skills = students who may use information skills to find information necessary to strengthen subject knowledge.
2. Expert subject understandings + novice information skills = students who may articulate information needs clearly to those who can help.
3. Novice subject understandings + novice information skills = students who are not likely to make progress on either strand.

Pitts noted that "students were not overwhelmed by too much information. Instead, they were floating in a sea of information but did not know how to access more than a few useful drops."[90]

Searching Skills

There has been considerable study of student searching behavior, particularly with online catalogs. After reviewing numerous studies, Nahl and Harada[91] did their own study with secondary students in six schools. They tested the ability of students to interpret and construct search statements in a presearch activity. They measured both accuracy of search statement and took a self-confidence measure. Students achieved scores averaging 60 percent correct and those who reported high confidence had significantly higher scores. They also noted that adequate content knowledge in the subject area was a crucial skill in coming to the index. They recommended a variety of approaches to teach the complexity of searching and warned against the idea that "one shot" instruction was sufficient.

As catalogs evolve from print to electronic, Walter, Borman, and Hirsh[92] examined children's searching skills as they queried The Science Library Catalog (a catalog designed with a search engine specifically for children). They found that children are able to use both browsing modes and keyword systems in automated library catalogs. If the topic was simple and straightforward, the children had success, but complexity, spelling, and vocabulary problems create barriers. They also noted that age, gender, and computer experience had minimal effect on children's ability to use the catalog, but that age might be a factor in keyword systems.

Numerous other studies of children's behavior and strategies of using automated catalogs are starting to appear. Paul Solomon[93] notes the high rate of search failure among children because most software interfaces in automated catalogs seem to be designed according to a "one-size-fits-all" mode, and that size does not fit children particularly well. Other studies probing the same topic were listed and reviewed briefly in the "Current Research" column of which the Solomon research report was a part.

Evaluating Information

Kafai and Bates[94] used a hook to engage elementary school students in searching for information connected to the curriculum on the Internet. Under the guise that students were preparing search guides for other students, students under the tutelage of graduate students in the UCLA library school learned to surf the web. One of the major findings was that younger students (fourth grade and below) are capable of locating information on the web but are uncritical of the content they find. This finding demonstrates a connection between critical thinking and mental maturity. Children also prefer web sites with high visual contents and short, simple textual content. They prefer more animation and interactivity and have little patience for long download times. While the students enjoyed the finding of the information, particularly if they found something like a picture of a human leg chewed by a shark, they were reluctant to write annotations for the sites they discovered.

Copying During the Research Process

McGregor and Streitenberger[95] have conducted several studies watching students as they extract information from various sources and then transcribe that information into their finished project. They find that when students receive very little guidance, they tend to copy a great deal from original sources rather than paraphrase or synthesize the ideas they find. When the teacher reminds students not to plagiarize, the researchers found that students copied less but it was still present in their final products. Teaching students how to extract information and do it ethically is still a challenge and another problem is to help teachers and students frame inquiry so that synthesis rather than regurgitation of ideas is the central focus of the quest.

Attitudes and Motivation

Carol Kuhlthau studied the attitudes and feelings of confidence throughout the research process. Students exhibited a wide variety of feelings from poor to strong self-confidence. The variations in attitude were included as a part of her model cited earlier in this paper.

Havener and Latrobe,[96] in their Treasure Mountain VI paper, reported investigating students engaged in research and related their experiences to a variety of psychosocial theories including alienation theory, gratification theory, knowledge gap theory, resilience theory, dynamic social impact theory, and social cognitive theory. They found elements from all six theories operational during students' experiences as students struggle to develop self-regulatory skills in the learning process. They encouraged library media specialists to recognize these struggles and extend assistance and encouragement throughout the process.

Small[97] is concerned that little attention is being paid to motivational issues in the information literacy effort even when a widely accepted goal of education is to develop intrinsically motivated, life-long learners who want to learn and actually enjoy the learning experience. After exploring numerous motivational theories, Small gave numerous suggestions for increasing motivation during the research process but noted that she had just begun to identify the best strategies for elevating motivation.

Applications to Specific Groups of Students

More and more research is being aimed at probing how various students react when information literacy models are applied in specific situations with a specific group of learners. Examples include:

Low Achieving Students

Linda Friel[98] finds that the Kuhlthau model can be very successful with low achieving freshman if the library media specialist conducts a "warmth seminar" and provides constant nurturing and encouragement throughout the research experience.

Gifted Students

McGregor[99] studied a group of gifted high school students in Canada in 1993 who were completing a library research assignment. She was not impressed with these students process approach to their information problem. She said: "Students do not instinctively operate in a metacognitive manner." Instead, they operated intuitively without awareness of process but they did seem to operate at all levels of Bloom's Taxonomy on their rush to create an assigned product.

High School Students in General

In a 1992-93 study of high school students doing research assignments in the Holt High School Library in Lansing, Michigan, Garland[100] found that student satisfaction during the research process supported the earlier Kuhlthau research findings. Elements related to satisfaction with the research process included student choice of topic within the confines of the subject matter; group work; topics clearly related to course content; clear communication by teachers of goals and the means of evaluation; and attention to intermediate steps as well as to the final product.

Students Studying Specific Topics

Todd[101] studied how a group of teenage girls processed several rounds of information concerning drugs. He found that in-depth work by librarians and teachers to understand how cognitive change happens, giving students a chance to evaluate the process of learning, and provision of a wide variety of information sources could well mean a greater quality of life for adolescents coping with realistic questions.

Bilingual Students

Walster[102] reminded the Treasure Mountain VI audience that bilingual students present a great challenge not only to teachers but also to library media specialists as these students encounter the information society. Walster asked numerous questions as she studied middle school students engaged in quests for information:

- How can we assure that non-English speaking and reading students will have the same access to information skills training and practice as other students?
- How can we develop appropriate strategies and techniques for working with bilingual and monolingual students when we have limited bilingual or English as a Second Language training?

- How will we as a profession address the real and substantive problems associated with evaluating/assessing the information literacy skills of bilingual or monolingual students?

After her observations, Walster had a number of recommendations for the library media specialist, a few of which are given here:

- work closely with bilingual teachers in the school
- have materials in appropriate languages and appropriate dialects of common languages
- recognize cultural and social meanings associated with the entire learning process
- be aware of the hidden language demands made on English learners throughout the entire information seeking process and make compensation for them.

Recognizing the extensive needs of the English learner in California schools, the California School Library Association revised its *From Library Skills to Information Literacy* manual mentioned earlier in this paper into a new second edition that integrates concerns, strategies, and advice for adults working with English learners during the research process. Interested readers are referred to that publication as the most extensive coverage of the problem yet to appear in the literature.

Academic achievement and information literacy

Todd,[103] in a study of 14-year-old low achievers doing a science investigation in Australia, found that integrated information skills instruction appeared to have a significant positive impact on students' mastery of prescribed science content and on their ability to use a range of information skills to solve particular information problems.

Assessment of student learning

The subject of assessment of learning is a broader topic than information skills but library media specialists are anxious to know the effects of their interventions on student learning. In 1994, Carol Kuhlthau published a collection of articles dealing entitled *Assessment and the School Library Media Center*.[104] Several of the articles in that collection deserve mention.

Madaus and Tan[105] and Neuman[106] review the history of the assessment movement in the educational field and the conflict between the behavioralist and constructivist camps to discover what a student knows when an inquiry method is used. They want to know how to test more than surface learning of factual or computational knowledge.

Jackson[107] looked at popular national tests such as the Iowa Test of Educational Development to ascertain whether information skills were being tested. She found that none of the tests attempted to assess the process of narrowing or broadening a topic, computerized information retrieval skills, development of a thesis, development of a search strategy, or ordering the steps in a search strategy. She concluded that other means of assessment such as portfolio compilations, oral recitations, and professional judgment would be more appropriate for measuring student success in the research process.

Numerous other authors in the Kuhlthau collection introduced school library media specialists to the movement of authentic assessment utilizing such techniques as portfolios, performances, the diagnostic interview, the questionnaire, observation, personal contact, and reflection tools such as learning logs, progress logs, and process logs.

Assessment of student performance using a rubric

Two major assessment tools of student performance done in the form of rubrics have appeared in the literature. The first was created in Colorado by the Colorado State Library and the Colorado Educational Media Association in 1996. It was published nationally for the first time in: *From Library Skills to Information Literacy*.[108] This instrument judges any student linformation-based product using five target indicators:

1. The student as a knowledge seeker;
2. The student as a quality producer;

3. The student as a self-directed learner;
4. The student as a group contributor; and,
5. The student as a responsible information user.

The rubric is formed using these indicators in four levels of attainment: In progress, Essential, Proficient, and Advanced.

The second major assessment tool was published in 1997 by the Kansas Association of School Librarians Research Committee[109] using an AASL research grant. This rubric rates student information products in five areas:

1. Articulates a clear, complete understanding of assignment/problem.
2. Demonstrates understanding of most of assignment/problem.
3. Shows vague, unfocused understanding of assignment/problem.
4. Is aware of assignment/problem.
NA Not applicable/nothing available

Each of the factors is rated on a five point scale as follows:

NA - Not applicable or no evidence is available
1 - Awareness
2 - Understanding
3 - Demonstration
4 - Application

Ennis and Norton[110] propose something close to a rubric evaluation in their list of possible checkpoints at three levels:

Clarity
(Focusing on a question)
    Student is able to identify a problem.
    Student is able to propose an hypothesis.
    Student is able to judge if the hypothesis is acceptable.
(Analyzing arguments) Note: This may have some overlap with the above.
    Student finds a variety of statements to answer the question.
    Student finds a variety of statements to support the hypothesis.
    Student finds a variety of statements identifying arguments that are not explicitly stated.
    Student is able to determine relevance of statements.
(Asking appropriate, clarifying questions)
    Student is able to analyze the amount of information found.
    Student is able to determine if enough information has been located to prepare the report.
    Student has sufficient background knowledge to continue.
Advance Clarity
(Defining terms)
    Student understands where to locate definitions.
    Student can determine the "best" definition from those in source.
    Student can expand the existing definition with examples.
(Identifying assumptions)
    Student can point out assumptions an author has stated.
    Student can state assumptions that author has made but not stated.
    Student can describe assumptions that author might have used.
Basis
(Judging credibility)

Students check credibility of content, only.
Students check credibility of content and sources.
Students check credibility of assumptions made from stated facts in content.

(Observation)

Student is able to take credible notes.
Student is able to observe information sources and incorporate new findings into report.
Student is able to transfer observations from previous experience or to transfer learning to other areas of the curriculum.

Inference

(Deducing and judging deductions)

Student is able to judge cause and effect.
Student is able to analyze whether necessary conditions are satisfied.
Student is able to interpret double negatives in sentences.

(Inducing or inductive influence)

Student is able to generalize and infer to hypotheses that are supposed to explain the facts. Does smoking cause cancer?

(Making value judgments)

No plausible alternatives
Deciding on an action.

Interaction

Interacting with others in discussions, presentations, debates, and written pieces:

Student participates in discussion.
Student leads discussion.
Student plans discussion.

Employing Fallacy Labels

Student detects errors in statements of fact.
Student detects errors in assumptions and hypotheses.
Student revises assumptions and hypotheses.
Interdependence

Other Assessment Techniques

Library media specialists and teachers might be impressed that during the learning process, students exhibit enthusiasm, excitement, well behaved attention, answer questions, and are busy. According to Resnick,[111] these characteristics do not necessarily guarantee that effective thinking is occurring but the following signposts have additional evidence of critical thinking:

- The path of action is not fully specified in advance.
- The total path is not 'visible' from any single vantage point.
- Multiple solutions with costs and benefits are provided rather than unique solutions.
- Nuanced judgment and interpretations are involved.
- Application of multiple criteria is in evidence, some in conflict with one another.
- Not everything bearing on the task at hand is know.
- Students must self-regulate the thinking process rather than allow another to set the steps for the solution.
- Students find meaning out of apparent disorder.
- Higher order thinking requires considerable mental work.

Woolls[112] in her Treasure Mountain VI paper reviews a wide variety of other assessment techniques including:

- Commercial tests covering some aspects of critical thinking.
- Creating your own tests using good testing practices.

- Using multiple choice tests that have been constructed specifically to measure critical thinking.
- Use self-assessment so that students start comparing their own work against a framework of good research practices.
- Use performance/presentation measures.
- Have students use checklists as they prepare their products.
- Do interviews.
- Have students use writing to evaluate their thinking.
- Evaluate the quality of the resources students choose to collect their information.
- Do a portfolio assessment.
- Do direct observation of the learning process.
- Teach and then observe student's questioning techniques.
- Evaluate the ability to formulate a search strategy.
- Evaluate the evaluation itself.

Other valuable contributions to the creation of assessment criteria and measurements include the work of Paul and Nosich,[113] Brookfield,[114] Baron,[115] and Halpren.[116]

CONCLUSIONS

Over the past 20 years, the theorists of the school library media community have been carving out the role of the library media specialist in relation to the learning activities of the school. They have not been satisfied with the support and supply role where the professional builds a functioning warehouse or network central information infrastructure. Instead, they have requested the professional library media specialist do outreach into essentially four major areas:

Basic literacy (reading)
Collaboration (resource-based teaching and resource-based learning)
Information literacy
Enhancing Learning Through Technology

The pressure of the warehousing tasks in the typical school library media center plus the lack of clerical and technical help has put a tremendous guilt-ridden role model upon individuals who are already overworked. Yet, the theorists have noted that in so many parts of the world, professionals are being replaced by cheaper non-professional staff when the contribution of the library media program is not perceived as essential or when financial exigency occurs even when the role is valued.

As technology continues to come into the classrooms of the world and connections to the Internet are established, the pressure of making the teacher solely responsible for good learning continues. Above and beyond the necessity for creating the information infrastructure and keeping it in working order, many do not feel that the typical school can afford an information professional. Neither do they feel that there are sufficiently trained people to assist in the proposed human interface role even if they could afford such a person.

Yet other major thinkers such as Ted Sizer, leader of the Coalition of Essential School Movement, realize that for schools using the inquiry method, school libraries are the foundational elements of the constructivist philosophy and that fully prepared library media specialists are key personnel of a successful program to restructure education.

The library media program in a school can make a difference in the learning process but how an individual library media specialist chooses to do so is a major challenge. Of the four principal program thrusts listed above, the most excitement in the literature of the past ten years has been information literacy.

This paper has reviewed what is known from an incomplete search of the literature, but has included the major sources well known in the school library media field and has looked outside the field for significant literature and research currently being touted as significant in the educational literature.

What have the authors learned in this investigation? The following principles seem to make sense at this point in time:

1. The information literacy models, while evolving slightly over the past ten years, are keeping up with the advance of research in cognitive development and solid principles of inquiry.

The early work of Kuhlthau, Eisenberg, and now the AASL standards for student learning are in solid agreement with efforts in education to make the learning process concentrate on what students know and be able to do, particularly when the method used by the teacher is inquiry.

2. There is much to be learned in the educational community concerning information literacy simply because so many segments of the community are working on the same problem.

We are not alone as a professional group in promoting better use of information and information technology. Numerous models, strategies, and assessment tools from a wide variety of sources are helping teachers and library media specialists plan interventions that will have an impact on learning. The opportunity to collaborate is easier when teachers are seeing the same messages in their literature as library media specialists are encouraging.

3. In spite of the interest in constructivist learning and inquiry, behaviorist approaches in education are still very strong.

Numerous authors have mentioned the need for a teacher to use the inquiry model if the research process as defined by library media specialists is to be successful. The reality is that there are a wide variety of teaching styles being used and the inquiry method is not currently the most popular model. Library media specialists need to be realistic about their intervention strategies and should be able to work within a wide range of teaching and learning styles to achieve their goals in implementing information literacy and enhancing learning through technology.

4. A great deal of research is being done observing students as they engage in research that requires a wide variety of information sources using a wide variety of information technologies.

To date, the research shows that we are not making great strides teaching students or teachers to handle new oceans of information currently available to most students. The way teachers design or encourage investigations, the expectations of students they set, the ways students understand what is expected of them, and the process by which students are performing investigations are a long way from what the literature is envisioning should happen. Major manuals of good practices and sound strategies are appearing in the literature and tools such as the Big Six Listserv are helping library media specialists translate the theory into practice. The question is whether practice can be affected fast enough to produce the desired impact and to carve out an essential role for the library media specialist in a school.

5. Methods to assess whether students are learning more effectively using information literacy principles are still in their infancy.

The press of continued reliance on testing surface learning and factual knowledge within each discipline is not only alive and well but receives continued emphasis by proposals for nationwide testing instruments which will perceive how well students are doing in comparison to students in a wide variety of world nations.

Some bright spots in ares of authentic assessment include the use of portfolios, performances, and other product evaluations. Library media specialists should have a wide variety of such methods in mind as they collaborate with teachers to create information-based projects involving the library media center and information technology.

6. Library media specialists responding exclusively to the current interest in information literacy do so at their own peril.

Library media specialists are like any other other educators who are looking for what is new and exciting. They want to develop initiatives to promote the new wave of fashionable ideas. The authors believe that a more balanced approach to library media programming is not only desirable but wise. Politically astute library media specialists realize they need to be in a leadership position as new information technologies arise, and as new methods of curricular emphases and programs emerge. Yet the need to make an impact in all of the areas remains:

- creating capable and avid readers,
- collaborating with teachers and students in creating effective learning experiences,
- enhancing and teaching information literacy, and
- ensuring that technology enhances the learning process.

Information literacy is an attractive element of library media programs because it is part of the tradition of a democratic society. Many philosophers have dreamed of nations and a world order based on critical thinkers with the freedom to challenge the prevailing ideas coupled with the problem solving skills to attack major problems of society. At the same time, we also recognize that the notion that all students should be critical thinkers is not universally accepted. Parents, religious leaders, governmental leaders, business leaders, ideologists and even teachers are willing to tolerate critical thinking as long as it does not challenge their own sphere of control. We might be spoilers, revolutionaries, or just plain troublemakers in our quest for critical learners. It's worth it.

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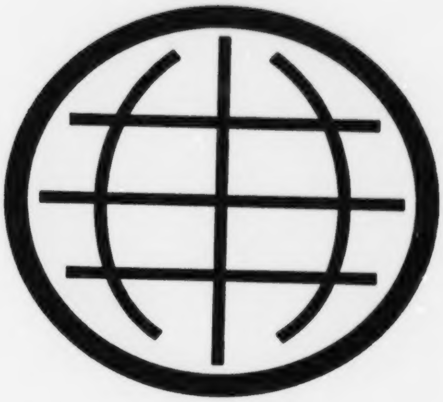

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